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PATENT ABSTRACTS OF JAPAN

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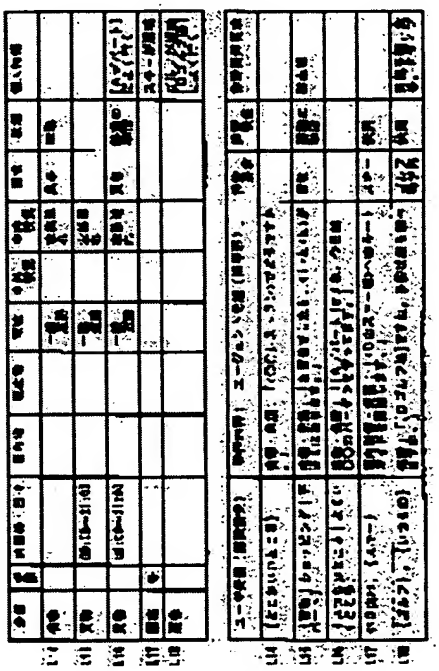
(54) CONTROL DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a control device capable of implementing the operation of equipment adapted to meet the demands of users.
SOLUTION: The control device to control various equipment on board of a vehicle while having interaction with a user by voice is provided with an interaction database formed of plural interaction data L14, L15... each appropriately describing contents on items of conditions (environments around the vehicle, conditions outside the vehicle, conditions inside the vehicle, etc.), in which the user is situated, user demands, the personal information of the user, the speech key word (user speech) of the user, and the operation contents of the equipment. Then the interaction data matching with the detected real conditions of the user, the estimated user demands, the present personal information of the user, and the speech key word of the user inputted through a microphone is retrieved from the database. According to the contents described by the item of the 'operation contents' in the interaction database, speech is made from a speaker, and another apparatus such as apparatus for information retrieval is operated. Therefore, it is possible to achieve the operation of apparatus adapted to meet the demands of the user.



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CLAIMS

[Claim(s)]
[Claim 1] The control unit which operates a predetermined device according to the information which was equipped with an input means characterized by providing the following to input the information in which the intention of a user to this user was reflected, and was inputted by this input means. A situation detection means to detect the situation that the user is placed. Information inputted by the aforementioned input means. A data-storage means for an activity setup by which the data for an activity setup for setting up the activity of the aforementioned device were memorized from the situation detected by the aforementioned situation detection means. A setting means will set up the activity as activity of the aforementioned device if the activity corresponding to the information inputted by the aforementioned input means and the situation detected by the aforementioned situation detection means is searched from the aforementioned data for an activity setup and there is corresponding activity, and an appliance-control means operate the aforementioned device according to the activity set up by this setting means.
[Claim 2] The control unit according to claim 1 characterized by providing the following. Information inputted by the aforementioned input means. The situation detected by the aforementioned situation detection means. Information inputted into the aforementioned data-storage means for an activity setup by the aforementioned input means while having a demand presumption means to presume a demand of a user, based on at least one of the activity of the aforementioned device by the aforementioned appliance control means. The demand by which the aforementioned presumption is carried out among the situation detected by the aforementioned situation detection means, and the demand presumed by the aforementioned demand presumption means.
[Claim 3] The control unit according to claim 2 characterized by providing the following. Information inputted into the aforementioned data-storage means for an activity setup by the aforementioned input means while having an individual information-storage means to memorize a user's personal information. The situation detected by the aforementioned situation detection means. The demand presumed by the aforementioned demand presumption means. Among the personal information memorized by the aforementioned individual information-storage means, it is the aforementioned personal information.
[Claim 4] The control unit characterized by having a change means to change the data for an activity setup of the above 3rd in a control unit according to claim 3 according to the personal information memorized by the aforementioned individual information-storage means.
[Claim 5] In a control unit according to claim 4 for the aforementioned individual information-storage means While two or more man-minutes personal information is memorized, out of the two or more man-minutes personal information memorized by the aforementioned individual information-storage means It has a discernment means to specify the pr s nt user's p rsonal information. further the afor mention d change means It is the control unit which changes the data for an activity s tup of the above 3rd according to the personal information specified by th aforem ntioned discernment means, and is characterized by using for the aforem ntioned s tting means the p rsonal information specified by th afor m ntioned disc rnment m ans when

searching activity from the data for an activity setup of the abov 3rd.
[Claim 6] In a claim 1 or a control unit according to claim 5 for th aforem nti n d data-storage means for an activity setup Only from the situation detected by the aforem ntion d situation detection means, the 4th data for an activity setup for setting up the activity of the aforementioned device is memorized. the aforementioned setting m ans The control unit which will be characterized by setting up the activity as activity of the aforementioned device if the activity corresponding to the situation detected by the aforementioned situation detection means is searched from the data for an activity setup of the above 4th and there is corresponding activity.
[Claim 7] It is the control unit which the aforementioned input means inputs the keyword which the user uttered as the aforementioned information in a claim 1 or a control unit according to claim 6, and is characterized by the bird clapper from the device for voice outputs for the aforementioned device outputting voice, and other devices.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to the control unit which operates predetermined devices, such as a device for information retrieval, and a device for voice outputs, according to the input in which the intention of users, such as utterance, a key stroke input, etc. of a user, was reflected.
[0002]
[Description of the Prior Art] That to which a user performs operation corresponding to the voice command by uttering the language beforehand defined as a voice command as navigation equipment for recent years, for example, automobiles, is put in practical use.
[0003] For example, when a user utters the voice command a "present location", while the control section which consists of a microcomputer which accomplishes the center of the equipment concerned makes devices for information retrieval, such as a CD-ROM drive, search the name of a place, an institution, etc. near a its present location with this kind of equipment, it is made to make the voice for guidance "it is near OO" output from the device for voice outputs which consists of a loudspeaker etc. based on the reference result.
[0004] Moreover, when the name of a place is uttered, while the control section of the equipment concerned, for example, makes the device for information retrieval search the circumference map of the name of a place by which utterance was carried out [above-mentioned] after a user utters the voice command "map reference", it is made to display the circumference map of the name of a place by which utterance was carried out [above-mentioned] on the device for a display which consists of CRT etc. based on the reference result.
[0005]
[Problem(s) to be Solved by the Invention] However, with the above-mentioned conventional equipment, the activity (namely, the content of reference what to search) of the device for information retrieval, the activity (namely, the content of utterance with voice) of the device for voice outputs, etc. are set to one to one voice command. Therefore, in order to obtain device operation (the content of reference, the content of utterance, etc.) desired truly, the user did not have to be able to utter more voice commands and was not able to get desired device operation in many cases.
[0006] For example, suppose that it programmed temporarily in equipment conventionally so that control action of searching the restaurant near a its present location to the utterance keyword of users, such as "a restaurant and reference", and guiding this reference result with voice might be performed. However, when vehicles are running the highway in the case of this example, even if a user wants to come to have a meal and it speaks with "a restaurant and reference", the restaurant which can go only from an ordinary road will be shown and it will becom meaningless information offer.
[0007] In addition, such a problem is the sam also about the case where a user inputs his int ntion not only when inputting his intention by utterance, but by the key stroke input etc. this inv ntion is made in view of such a probl m, is the f w r input from a user and aims at off ring

the control unit which can r aliz d vice operation adapted to th request of th us r.
[0008]
[A The means for solving a technical problem and an ffect of th invention] Th control unit of this invention according to claim 1 made in order to attain the above-mentioned purpose is equipp d with an input means M1 to input the information in which the intention of a us r to this user was reflected, and op rates the predetermined d vice M3 according to the information (henceforth input) inputted by the input means M1 so that it may illustrate to drawing 1 .
[0009] In addition, various things, such as a device for communication by the device for information retrieval with which information is searched from a predetermined database as a device M3, the device for voice outputs which outputs voice, radio, or the cable, air-conditioning equipment, audio equipment, such as television and a tape recorder, devices for a display, such as CRT and liquid crystal, and a lighting device, can be considered. And you may be one, and two or more devices M3 which the control unit concerned operates may reach, and the number of them may be [two or more].
[0010] Moreover, as information which the input means M1 inputs, various things, such as a keyword of the voice which the user uttered, and information by a user's key stroke or switch operation, can be considered. Furthermore, you may make it include no inputting (getting it blocked and a user not inputting information intentionally) as information which the input means M1 inputs.
[0011] Especially the control unit of this invention is equipped with a situation detection means M5 to detect the situation that the user is placed, and the data-storage means M7 for an activity setup, and the data D1 for an activity setup for setting up the activity of a device M3 are memorized by the data-storage means M7 for an activity setup here from the information inputted by the input means M1, and the situation detected by the situation detection means M5.

[0012] And if there is activity to which the setting means M9 searches the activity corresponding to the information inputted by the input means M1 and the situation detected by the situation detection means M5 from the aforementioned data D1 for an activity setup, and corresponds, the activity will be set up as activity of the aforementioned device M3. Then, the appliance control means M11 operates a device M3 according to the activity set up by the aforementioned setting means M9. In addition, in this invention, the contents of a do-nothing operation (it is got blocked and don't operate a device M3) are also included as activity of a device M3.
[0013] According to the control unit of such this invention, according to the situation that not only the input from a user inputted by the input means M1 but the user is placed, the activity of a device M3 is changeable. That is, even if the input from a user is the same, according to the situation that the user is placed, activity of a device M3 can be made the optimal. Therefore, device operation adapted to the request of the user is realizable by the fewer input from a user.
[0014] The control unit according to claim 2 is added and equipped with the demand presumption means M13 to the control unit according to claim 1 so that it may illustrate to drawing 1 . next, this demand presumption means M13 A demand of a user is presumed based on at least one of the information inputted by the input means M1, the situation detected by the situation detection means M5, and the activity of the device M3 by the appliance control means M11.
[0015] And the 2nd data D2 for an activity setup for setting up the activity of a device M3 is further memorized by the data-storage means M7 for an activity setup from at least two or more items including the demand presumed by the demand presumption means M13 among the information inputted by the input means M1, the situation detected by the situation detection means M5, and the demand presumed by the demand presumption means M13.
[0016] The setting means M9 and among the information inputted by the input means M1, the situation detected by the situation detection means M5, and th demand presumed by th demand presumption means M13 If the activity corresponding to at least two or more it ms including the demand presumed by the demand presumption means M13 is searched from the data D2 for an activity setup of the above 2nd and th re is corresponding activity, th activity will be set up as activity of a device M3.

[0017] That is, a demand of a user is pr sum d bas d on at l ast one of the input from a us r, the situation detected by th situation d tection means M5, and the activity of the device M3 by the appliance control means M11, and it is made to set up the activity of a devic M3 for a demand of the user who presumed as one of the parameters in a control unit according to claim 2.

[0018] Therefore, according to such a control unit according to claim 2, device operation bas d more on the request of a user is realizable. In addition, what is necessary is just to set up beforehand the data D1 for an activity setup, and the 2nd data D2 for an activity setup exclusively so that the activity from which the setting means M9 differs simultaneously from each data D1 and D2 may not be discovered. Moreover, when the priority of reference was prepared in each data D1 and D2, and the setting means M9 searches every one to the activity of each data D1 and D2 according to the priority and has the corresponding activity, you may make it set up the activity as activity of a device M3.

[0019] Next, the control unit according to claim 3 is added and equipped with an individual information-storage means M15 to memorize a user's personal information, to the control unit according to claim 2 so that it may illustrate to drawing 1 . Further and for the data-storage means M7 for an activity setup Among the information inputted by the input means M1, the situation detected by the situation detection means M5, the demand presumed by the demand presumption means M13, and the personal information memorized by the individual information-storage means M15 From at least two or more items including the personal information memorized by the individual information-storage means M15, the 3rd data D3 for an activity setup for setting up the activity of a device M3 is memorized.

[0020] The setting means M9 and among the information inputted by the input means M1, the situation detected by the situation detection means M5, the demand presumed by the demand presumption means M13, and the personal information memorized by the individual information-storage means M15 If the activity corresponding to at least two or more items including the personal information memorized by the individual information-storage means M15 is searched from the data D3 for an activity setup of the above 3rd and there is corresponding activity, the activity will be set up as activity of a device M3.

[0021] According to such a control unit according to claim 3, by memorizing the personal information of the user who actually uses the equipment concerned for the individual information-storage means M15, the user's personal information is set to one of the parameters, and the activity of a device M3 will be set up. Therefore, according to this control unit, device operation adapted to the request peculiar to a user can be realized, and it is advantageous.

[0022] In addition, what is necessary is just to set up beforehand the data D1 for an activity setup, the 2nd data D2 for an activity setup, and the 3rd data D3 for an activity setup exclusively so that the activity from which the setting means M9 differs simultaneously from each data D1, D2, and D3 may not be discovered. Moreover, when the priority of reference was prepared in each data D1, D2, and D3, and the setting means M9 searches every one to the activity of each data D1, D2, and D3 according to the priority and has the corresponding activity, you may make it set up the activity as activity of a device M3.

[0023] Next, the control unit according to claim 4 is added and equipped with the change means M17 to the control unit according to claim 3 so that it may illustrate to drawing 1 . And the change means M17 changes the data D3 for an activity setup of the above 3rd according to th personal information memorized by the individual information-storage means M15.

[0024] According to such a control unit according to claim 4, device operation which actually uses the equipment concerned and which could change the activity of a device M3 and was further based on the request peculiar to a user for every user is realizable. A control unit according to claim 5 is set to a control unit according to claim 4 so that it may illustrate to drawing 1 . next, for the individual information-storage m ans M15 While two or more man-minut s personal information is m morized, it has a discernment m ans M19 to specify th present user's personal information, out of the two or more man-minutes personal information memorized by the individual information-storage means M15.

[0025] And the change means M17 changes the data D3 for an activity s tup of th above 3rd

according to the personal information sp cified by the disc rnm nt m ans M19, and in cas the setting means M9 searches activity from the data D3 for an activity s tup of th above 3rd, the personal information specified by the aforem ntioned disc rnment means M19 is used for it.
[0026] According to this control unit according to claim 5, even if which man of two or more persons personal information was remembered to be by the individual information-storage m ans M15 uses the equipment concerned, he can acquire the ffect by the control unit according to claim 4. Next, in the control unit according to claim 6, in the control unit according to claim 1 to 5, the 4th data D4 for an activity setup for setting up the activity of a device M3 is memorized only from the situation detected by the situation detection means M5 by the data-storage means M7 for an activity setup so that it may illustrate to drawing 1 .
[0027] And if the setting means M9 searches the activity corresponding to the situation detected by the situation detection means M5 from the data D4 for an activity setup of the above 4th and has the corresponding activity, the activity will be set up as activity of a device M3. That is, in the control unit according to claim 6, the activity of a device M3 is made to be set up only from the situation detected by the situation detection means M5.
[0028] When the situation that the user is placed turns into a specific situation according to such a control unit according to claim 6, irrespective of other factors, such as input from a user, a device M3 can be operated in predetermined activity, and it is advantageous. For example, when it has the device for voice outputs which outputs voice as a device M3, warning with voice etc. can be performed to a user in a specific situation.
[0029] In addition, what is necessary is just to set up beforehand the 4th data D4 for an activity setup, and other data for an activity setup (D1, D2, D3) exclusively so that the activity from which the setting means M9 differs simultaneously from each data may not be discovered. Moreover, you may prepare the priority of reference in the 4th data D4 for an activity setup, and other data for an activity setup (D1, D2, D3).
[0030] Next, in a control unit according to claim 7, the input means M1 inputs the keyword which the user uttered in a control unit according to claim 1 to 6 as the aforementioned information (information in which the intention of a user was reflected). And a device M3 consists of a device for voice outputs for outputting voice, and other devices.
[0031] According to such a control unit according to claim 7, the appliance control equipment of the interactive mode which operates other devices other than the device for voice outputs can be easily constituted according to the contents of a setting of each data D1-D4 for an activity setup which the data-storage means M7 for an activity setup is made to memorize, conversing with a user with voice. It becomes information offer equipment of the interactive mode which can offer exactly the information which the device for information retrieval with which information is searched from a predetermined database, then a user expect a device besides the above especially.
[0032]
[Embodiments of the Invention] Hereafter, the operation form of this invention is explained using a drawing. Drawing 2 is a block diagram showing the composition of the control unit 1 of an operation form first. In addition, the control unit 1 of this operation form controls various devices carried in the vehicles, being carried in an automobile (vehicles) and having a dialog with the crew (mainly operator) and voice of vehicles as a user.
[0033] As shown in drawing 2 , the control unit 1 of this operation form The input unit 3 for a user inputting various kinds of instructions, data, etc. by external operation, The microphone 5 for inputting voice, and the loudspeaker 7 for outputting voice, The navigation equipment 9 of the common knowledge which performs detection, path guidance, etc. of the current position (its present location) of vehicles, The display 11 for displaying a picture, and the air-conditioner equipment 13 which controls air-conditioning in the car, The audio equipment 15 which consists of a cassette tape recorder, CD (compact disk) player, MD (mini disc) player, radio, television, etc., The broadcast terminal of well-known VICS (Vehicle Information and Communication System), The communication device 17 which performs data communication by radio b twe n th Internet broadcast terminals which are conn ction windows with the Internet, It conn cts with the various sensors 19 for det cting v hicl s op rational status, such as the vehicle speed

and an acc leration-and-dec l ration state, the t mp ratur of vehicl s insid and utside, the existence of a raindrop, tc., and other control units (illustration abbr viation) which control the door lock of vehicles, a windowpane (power window), an engine, a brake gear, etc.
[0034] In addition, navigation equipment 9 is equipped with the op ration key for th CD-ROM drive for reading data and a user inputting instructions etc. from CD-ROM which m morized data for path guidance, such as GPS equipm nt of the common knowledge for d tecting the current position of vehicles, and map data, name of a place data, institution name data, and its CD-ROM. And if the instructions which direct the path guidance to the destination and the destination through an operation key from a user are inputted, navigation equipment 9 will display a road map including the optimal path for resulting to the current position and the destination of vehicles on display 11, and will perform path guidance. Moreover, if the road map for path guidance is not only displayed, but various pictures, such as a menu for information retrieval, are displayed on display 11 and audio equipment 15 is further set as the mode of television with navigation equipment 9, the receiving picture of television received by the television tuner with which the audio equipment 15 was equipped will be displayed on it.
[0035] And the system control section 21 constituted centering on the microcomputer with which a control unit 1 consists of CPU, a ROM, RAM, etc., The interface 23 which inputs the instructions and data from an input unit 3 into the system control section 21 (I/F), The voice input section 25 which changes into digital data the sound signal inputted from the microphone 5, and is inputted into the system control section 21, The speech synthesis section 27 to which the text data outputted from the system control section 21 is changed into the sound signal of an analog, it outputs to a loudspeaker 7, and singing of the loudspeaker 7 is carried out, It has the above-mentioned navigation equipment 9, display 11, air-conditioner equipment 13, audio equipment 15, a communication device 17, the various sensors 19, and the appliance control interface (appliance control I/F) 29 that connects other control units and system control sections 21 possible [data communication].
[0036] Moreover, the control unit 1 is equipped with the Internet address database 31 which memorizes the address (Internet address) of the Internet, and the reference control section 33 in order to search and acquire the information on desired from the Internet by the communication device 17. And when the system control section 21 outputs the reference keyword showing the contents of reference (contents) to the reference control section 33, the reference control section 33 operates a communication device 17 through appliance control I/F29, searches the information corresponding to the above-mentioned reference keyword from the Internet broadcast terminal, and makes the reference result input into the system control section 21. Moreover, in the Internet address database 31, the Internet address used by the reference control section 33 in the past is memorized by the instructions from the system control section 21, and the reference control section 33 will reuse the Internet address in the Internet address database 31, if the same reference keyword as the reference keyword inputted in the past is received from the system control section 21.
[0037] In addition, with this operation form, it is equivalent to the device M3, and hereafter, a loudspeaker 7, navigation equipment 9, the CD-ROM drive (illustration abbreviation) with which the navigation equipment 9 was equipped, display 11, air-conditioner equipment 13, audio equipment 15, a communication device 17, and other control units (illustration abbreviation) name these generically, and call it a device M3. Moreover, among these devices M3, a loudspeaker 7 is equivalent to the device for voice outputs, and except [it] is equivalent to other devices.
[0038] And the utterance further outputted to a control unit 1 from a loudspeaker 7 As a means to memorize the data for setting up the contents (namely, activity of a loudspeaker 7) of (also calling it agent utterance hereafter), and the activity of a device b sides the above of thos other than loudspeaker 7 It has the dialog data-storage section 35 which memorizes a dialog database, and the user profil storage section 37 which memorizes a user's two or more man-minutes personal information (henceforth a user profile). In addition, the Int rn t address database 31 mentioned above with this dialog data-storage section 35 and the us r profile storage section 37 is constitut d by the non-volatile m mory in which read-out and the writing

of data are possible.
[0039] Here, the dialog database memorized by the dialog data-storage section 35 and the us r profile memorized by th user profile storage section 37 are explained. First, the information that the user profile as personal information memorized by the user profile storage section 37 is peculiar to a user about each item, such as the following - (P-1) (P-11), is described.
[0040] (P-1): Classifications of the man (general, the president, a young man, sex, etc.).
(P-2): Other identification information other than a name or the name for discriminating the man further (a password, identification number, etc.).
(P-3): Birth date (birthday).
[0041] (P-4): Hometown.
(P-5): Address.
(P-6): Occupation.
(P-7): Executive.
[0042] (P-8): Hobby.
(P-9): The place which goes by the purpose of a hobby well.
(P-10): The place which goes by the purpose of shopping well.
(P-11): Family composition, a family's name, and a family's birth date.
[0043] In addition, this user profile is memorized by the user profile storage section 37 by write-in operation of the system control section 21, when a user operates an input unit 3 and inputs the contents of each above-mentioned item. Next, the dialog database memorized by the dialog data-storage section 35 has the data structure of a tabular format for the example, as shown in drawing 4 - drawing 8 . And it sets to drawing 4 - drawing 8 , and they are each lateral lines L1-L23. It is 1 set of dialog data, and the dialog database consists of plurality of such dialog data. In addition, at drawing 4 - drawing 8 , they are each lines L1-L23. It is continued and expressed to two steps.
[0044] Namely, each set talk data which constitute a dialog database The item of a classification of the dialog data, and two or more items showing the situation that the user is placed (with this operation form) The environment of a season, a time zone or time, the destination, a its present location, and the circumference of vehicles, the situation outside a vehicle, and an in-the-car situation, The item of a demand of a user, the item of a user's condition, and the item of a user's personal information, The item of the utterance (henceforth user utterance) of a user inputted through a microphone 5 and the voice input section 25, The item of the activity at the time of the control unit 1 concerned operating a device M3 (the contents of agent utterance, and activity of other devices other than loudspeaker 7), It has the data area for describing corresponding contents about each of the item of the presumed demand which is a demand of a user presumed, the item of the presumed state which is in a user's state presumed, and the item of the presumed related demand which are other demands of a user presumed. And each set talk data describe the contents corresponding to the data area of each above-mentioned item. In addition, description means that the data showing the contents corresponding to the data area secured beforehand are set.
[0045] Here, each item of such a dialog database is explained concretely.
(C-1): The contents as which the dialog data expresses whether it is a thing about what subject in a dialog with a user are beforehand described by the item of a classification "a classification", and the contents showing the classification of the agent utterance described by the item of "activity" mentioned especially later are described.
[0046] although there are a greeting, appreciation, a family, a meal, a parking lot, path guidanc , reference, shopping, a hobby, device operation, etc. and illustration is not further carried out as contents described by and this item of "classification", for example so that it may illustrate to drawing 4 - drawing 8 -- in addition, introduction, a sport, and the destination -- it asks a question and checks, and it suits and ****, a halt, an end, etc. are
[0047] (C-2): The cont nts which subdivided furth r the four seasonses, such as any, early summer, midsummer, etc. of the four seasons, such as spring, summer, autumn, and winter, are beforehand d scrib d by the seasonal "a s ason" it m.
(C-3): The contents of the concret time zone called daytime, night, early morning, midnight, tc.

and wh n to when or the detail d time of what minut is described wh n by the item of a time zone or time "a time zone or time" on what [, what / month / what] in the morning.
[0048] And the item of this "time zone or time" has that the cont nts are b forehand described to be, and the thing the system control section 21 describes the cont nts to be serially. For xample, the line L15 illustrated as the lin s L1-L3 and the dialog data of L7 which are illustrated to drawing 4 to drawing 6 and L16 In dialog data, the contents showing a time zone are beforehand described by the item of "a time zone or time." moreover, line L11 illustrated to drawing 5 a dialog — data — setting — "— a time zone — or — time — " — an item — it can set — < — > — inside — **** — system control — the section — 21 — present — time — serially — updating — having — describing — having .
[0049] (C-4): The destination which a user means is described by the system control section 21 by the item of the destination "the destination." In addition, the system control section 21 reads the destination set up by the user from navigation equipment 9, or acquires the content which should be described in the item of the "destination" according to the content of a dialog with the user till then.
[0050] And the item of this "destination" has some which are not described to be that the content is described to be. the line L12 illustrated to drawing 5 and L13 a dialog — data — setting — "— the destination — " — an item — it can set — < — > — inside — **** — system control — the section — 21 — till then — a user — a dialog — the content — having responded — the destination — describing — having . [for example,] Moreover, the above-mentioned line L12 illustrated to drawing 4 - drawing 8 and L13 The content is described by the item of the "destination" in the dialog data of an except.
[0051] (C-5): The present location of vehicles is described by the system control section 21 by the item of a present location "a present location." In addition, the system control section 21 reads the present location of vehicles from navigation equipment 9, and acquires the content which should be described in the item of a "present location."
[0052] And the item of this "present location" has some which are not described to be that the content is described to be like the item of the "destination." line L11 -L13 [for example,] illustrated to drawing 5 a dialog — data — setting — "— a present location — " — an item — it can set — < — > — inside — **** — system control — the section — 21 — vehicles — a present location — describing — having . Moreover, above-mentioned line L11 -L13 illustrated to drawing 4 - drawing 8 The content is described by the item of a "present location" in the dialog data of an except.
[0053] (C-6): The content showing the environment of the circumference of vehicles is beforehand described by the environmental "environment" item. Specifically, the content showing passage environment, the content (it is easy to slide on a road surface freeze and a road surface) showing a passage (highway, ordinary-road, national highway, prefectural road, etc.) state, the contents (a speed limit, one-way traffic, DO NOT ENTER, etc.) showing traffic environment, and the contents (the inside of the mountain where the sea is near, and a town, before a station, etc.) showing geography environment are described beforehand.
[0054] (C-7): The content showing the situation outside a vehicle is beforehand described by the item of the situation outside a vehicle "the situation outside a vehicle." The content which specifically expresses the weather of a its present location (being fine cloudiness, a light rain, rain, heavy rain, snow, thunder, a typhoon, etc.), The contents (being fine cloudiness, a light rain, rain, heavy rain, snow, thunder, a typhoon, etc.) showing the weather of the destination, the contents (traffic congestion, the occurrence of accident which it is congested and has become empty a little) showing a traffic situation, and the contents (those with passing vehicles, those with flattery vehicles, those with precedence vehicles, etc.) showing a vehicles circumference situation are described beforehand. In addition, as a content showing a vehicles circumference situation, the classification (a truck, a passenger car, motorbike, etc.) of passing vehicles or flattery vehicles can also b added and describ d.
[0055] (C-8): The cont nt showing a situation in the car is b forehand described by th it m of an in-the-car situation "an in-the-car situation." The cont nt which sp cifically expresses operational status (a run by the congest d passage, a comfortable run, those with scillating,

spe d ov r, etc.), the cont nt (one p rson and two persons — many (thr or more p rsons) — a family companion — or further) showing an entrainment state Contents showing the degree of vehicle room air temperature, such as a detailed content what man is sitting on which seat, the contents (a drive, with a family, a drive with a fri nd, date with a sweetheart, etc.) showing th move purpose, the content showing audio environment, etc. ar described b forehand.

[0056] (C-9): The content showing the demand considered that a user has in the item of a demand "a demand" is described beforehand. Specifically, the content of air-conditioner operation needlessness etc. which lowers a meal, a drink, shopping, a drive, a break, play, a park, an amusement park, a theme park, boring, tennis, a pool, a jogging, sea bathing, skiing, golf, golf course reservation, path guidance, a parking lot, and air-conditioner setting temperature and which raises air-conditioner setting temperature is described.

[0057] (C-10): The content showing the mental state or corporal state considered that a user becomes is beforehand described by the item of a state "a state." concrete — hungry — being hungry — before — movement — preparation (it is going to move — a state) — good condition — usual — being hot — a throat — a dry — energy — lively — a drive — enjoying oneself — **** — a meal — inside — music — appreciation — inside — television — appreciation — inside — a full stomach — defatigation — returning — ** — playing — ** — early — the destination — reaching — ** — a break — inside — being irritated — **** — getting angry — ****

[0058] (C-11): The content of the item relevant to the content of description of other items (especially, "a classification", "a demand", "user utterance", "activity") in the dialog data is described by the item of personal information "personal information" among each item (P-1 to P-11) of a user profile mentioned above.

[0059] And there are that the content of fixation is beforehand described to be as an item of this "personal information", and a thing by which the content of description is changed by the system control section 21 according to the user profile actually memorized by the user profile storage section 37. For example, in the dialog data of the line L8 illustrated to drawing 4 , the content (this example those with a child) corresponding to the item of the (P-11:family composition) of a user profile is beforehand described by the item of "personal information." Moreover, in the dialog data of the line L17 illustrated to drawing 6 , the content (at this example, skiing is a hobby) corresponding to the item of a (P-8:hobby) of a user profile is beforehand described by the item of "personal information."

[0060] on the other hand, line L16 illustrated to drawing 6 a dialog — data — setting — "— an individual — information — " — an item — it can set — [—] — inside — **** — system control — the section — 21 — a user profile — (— P - ten — : — shopping — the purpose — good — going — a place —) — an item — describing — having had — the content (this example A department store) — describing — having . moreover, line L18 illustrated to drawing 6 a dialog — data — setting — "— an individual — information — " — an item — it can set — [—] — inside — **** — system control — the section — 21 — a user profile — (— P - nine - - : — a hobby — the purpose — good — going — a place —) — an item — describing — having had — the content (this example D golf course) — describing — having .

[0061] the above-mentioned line L16 and L18 "— an individual — information — " — an item - - **** — beforehand — a user profile — each — an item — inside — any — an item — describing — having had — the contents — [—] — inside — describing — a thing — being shown — directions — data — setting — having — **** — system control — the section — 21 — the above — directions — data — being based — "— an individual — information — " — an item Therefore, the above-mentioned line L16 and L18 The contents of description of the item of "personal information" will be changed into the user profile storage section 37 according to the actually memorized user profile.

[0062] In addition, the above-mentioned line L18 The contents of a hobby in golf ar also beforehand described by th item of the "personal information" in dialog data.

(C-12): The keyword under utterance of the user expect d to be inputted through a microphon 5 and the voice input section 25 is beforehand described by the it m of user utteranc "user utterance." And with this operation form, the keyword group described by the item of this "user

utterance" s rves as a r cognition vocabulary of the control unit 1 conc rned.
[0063] However, line L11 illustrated to drawing 5 The keyword described in < <>> according to the item of "user utterance" in dialog data is a variable data supposing the proper noun showing the name of a place being inputted, and the keyword describ d in [] is a variable data supposing the language showing the kind of cooking b ing inputted. Moreover, line L17 illustrated to drawing 6 The keyword d scribed in < <>> according to the item of "user utt rance" in dialog data is a variable data supposing the proper noun showing the name of a mountain being inputted.
[0064] (C-13): The activity of the device M3 corresponding to the contents which the activity at the time of the control unit 1 concerned operating a device M3 (the contents of the agent utterance which should be outputted from a loudspeaker 7, and activity of other devices other than loudspeaker 7) is beforehand described, and described by the dialog data especially in the above (C-1) of - (C-12) and each item is described by the item of activity "activity."
[0065] For example, while making the CD-ROM drive or communication device 17 with which navigation equipment 9 was equipped search a nearby restaurant from a its present location in the item of "activity", is it "meal from a loudspeaker 7 in the dialog data of the line L9 illustrated to drawing 5 , based on the reference result? this — if it becomes closely, there is a store of the <a>, <b>, <c>, etc. affair <X1> Where does it eat? The activity of the device M3 of making the agent utterance " output is described beforehand. In addition, a communication device 17 is made to communicate with the Internet broadcast terminal, and is made to search required information from the Internet.
[0066] Moreover, line L10 illustrated to drawing 5 In dialog data in the item of "activity" Whil making the above-mentioned CD-ROM drive or a communication device 17 search two near parking areas (or service area) from a its present location If it is an after <<e> parking area from a loudspeaker 7 to "<d> parking area based on the reference result, it is a part for after <X3 >. [of a part for X2 >, and a degree] The activity of the device M3 of making the agent utterance " output is described beforehand.
[0067] Furthermore, for example, in the dialog data of the line L19 illustrated to drawing 7 , the degree of "room air temperature is over 40 degrees C from the loudspeaker 7 in the item of "activity." Air-conditioner setting temperature is lowered. While making the agent utterance " output, the activity of the device M3 of making the temperature of the vehicle interior of a room lowered to air-conditioner equipment 13 is described beforehand.
[0068] in addition — drawing 5 — and — drawing 6 — setting — "— activity — " — an item — indicating — having had — < — > — inside — a character — inside — a — from — k — up to — the alphabet — O — O — a restaurant — and — C — a mountain — a skiing area — The proper noun obtained by reference operation (specifically, a, b, c, f, and OO restaurant) The searched restaurant name, the parking-area name with which d and e were searched, the parking lot name with which g was searched, the passage name with which h and i were searched, and the shopping center name with which j and k were searched — it is — X1 from — X5 up to — the sign which starts in X Numeric values acquired by reference operation, such as a number and time It is (the numeric value which specifically expresses the time of the restaurant f wh re the numeric value showing the total number of cases, such as the restaurants a, b, and c wh re X1 was searched, X2, the numeric value showing the duration to the parking areas d and e with which Xthree was searched, X4, and X5 were searched which can be reserved).
[0069] As an item of "activity", there are some by which the contents of description are changed by the system control section 21 according to the user profile actually memorized by the user profile storage section 37 like the item of "personal information" on the other hand further. ** for example, line L16 illustrated to drawing 6 [] [in / the item of "activity" / on dialog data and] — inside, the contents (this example A department store) described by the (item which goes by the purpose of P-10:shopping well) of a user profile are describ d by th system control section 21 mor over, line L18 illustrated to drawing 6 [] [in / the item of "activity" / on dialog data and] — inside, the contents (this example D golf course) d scrib d by the (item which goes by th purpose of a P-9:hobby well) of a us r profile are describ d by the system control section 21
[0070] the above-mentioned line L16 and L18 "— activity — " — an item — **** —

beforehand — a user profile — each — an item — inside — any — an it m — d scribing — having had — the content — [—] — inside — describing — a thing — being shown — directions — data — setting — having — **** — system control — the s ction — 21 — the above — directions — data — being based — "— activity — " — an item — it can set — [Therefore, the above-mention d line L16 and L18 The content of description of th item of "activity" (in the case of this example th content of agent utterance) will be changed into the user profile storage section 37 according to the actually memorized user profile.

[0071] as the activity of the device M3 which the item of "activity" of the line L16 illustrated to drawing 6 shows when it explains concretely — above — [] — while making a communication device 17 search from the Internet the target product of the bargain performed at A departm nt store described inside today, is it "A department store from a loudspeaker 7 based on the reference result? The bargain of OO (for example, electrical machinery supply) is done today. It becomes a thing of making the agent utterance " output. moreover — as the activity of the device M3 which the item of "activity" of the line L18 illustrated to drawing 6 shows — above — — [] — is it "D golf course from a loudspeaker 7 based on the content (D golf course) described inside? Is reservation status investigated? It becomes a thing of making the agent utterance " output.

[0072] (C-14): In the item of a presumed demand "a presumed demand" While the actual situation that the user is placed turns into a situation described in the item (C-2 to C-8) of the situation in the dialog data A user utters the keyword described by the item (C-12) of "user utterance" in the dialog data. Furthermore, when it is assumed that device operation described in the item (C-13) of the "activity" in the dialog data was actually performed, the content of the demand sensibly considered that a user has is described beforehand.

[0073] And the variation (kind) of the content described by the item of this "presumed demand" is the same as that of the content described by the item of a "demand" mentioned above.

(C-15): In the item of a presumed state "a presumed state" While turning into a situation described in the item (C-2 to C-8) of the situation in the dialog data, the actual situation that the user is placed as well as the item of a "presumed demand" A user utters the keyword described by the item (C-12) of "user utterance" in the dialog data. Furthermore, when it is assumed that device operation described in the item (C-13) of the "activity" in the dialog data was actually performed, the content in the state where it is thought sensibly that a user becomes is described beforehand.

[0074] And the variation of the content described by the item of this "presumed state" is the same as that of the content described by the item in the "state" where it mentioned above.

(C-16): The content of demand with the another content described in the item of "a presumed demand" in the dialog data among the demands sensibly considered that a user has in the item of a presumed related demand "a presumed related demand" based on the same assumption as the item of the above "a presumed demand" is described beforehand.

[0075] And the variation of the content described by the item of this "presumed related demand" is the same as that of the content described by the item of a "demand" mentioned above. In addition, in this operation gestalt, although the content is described by all dialog data about two items of "a classification" and "activity" as shown in drawing 4 - drawing 8 , the content may not be described about other items. That is, the portion of the blank in drawing 4 - drawing 8 shows that the content is not described. And according to the content described in the item of "activity", it should just determine whether the content is described in which items other than "a classification" and "activity." However, the corresponding content is described by at least one or more items among items other than "a classification" and "activity."

[0076] Next, in the control unit 1 of this operation gestalt constituted as mentioned above, the processing performed in the system control section 21 is explained using drawing 3 . As shown in drawing 3 , when vehicles are ignition switched off (illustration ellipsis) and a power supply is supplied to the control unit 1 conc rned, the system control section 21 At Step (it is h reaft r described as "S") 110, it first minds any with an input unit 3, I/F23 and a microphone 5, and th voice input s ction 25 they are. The id ntification information (for xampl , a name, a password, an identification number, a card number, etc.) from the pr sent us r (us r) inputted as a key

input or voice is read. In addition, you may make it read the information on an ID card as identification information.

[0077] And the user profile the contents (a name and other id ntification information) d scribed by the item (P-2) mentioned above out of the two or more man-minutes us r profile memorized by the user profile storag section 37 in S120 continuing and whose identification information read by the above S110 correspond is specified, and the specified user profile is memorized to the buffer area beforehand set up in RAM as the present user's user profile.

[0078] And a content setup of the dialog database in the dialog data-storage section 35 is further performed in S130 continuing using the user profile memorized to the above-mentioned buffer area. That is, based on the directions data, the content of the user profile in the above-mentioned buffer area is described about the dialog data with which the directions data mentioned above among each set talk data which constitute a dialog database are set. the line L16 illustrated to drawing 6 by this processing of S130 and L18 a dialog -- data -- it can set -- "-- an individual -- information -- " -- "-- activity -- " -- each -- an item -- [--] -- inside -- present -- a user -- being peculiar -- the content -- describing -- having -- ******** . [and]

[0079] Furthermore, in these S130, the content of the agent utterance described by the item of "activity" of a dialog database is changed to that from which a tone differs according to the instructions from a user inputted through an input unit 3 and I/F23. That is, in the control unit 1 of this operation gestalt, the character on utterance of the equipment 1 concerned (tone) can be changed now into condition, such as the man in the street, the president, a young man, a friend, and a girl, corresponding to the instructions from a user. In addition, the content of the agent utterance illustrated to drawing 4 - drawing 8 is standard form when a user specifies the "man in the street."

[0080] Next, in order that the system control section 21 may search the dialog data which suited the actual situation that the user was placed from the dialog database by processing after S220 later mentioned in S140 Based on the data of the clock built in self, time (a year, the moon, a day, time), the present four seasons, a present time zone, etc. detect the actual situation corresponding to the "season" of a dialog database, and the item of "a time zone or time", and memorize the detection result to the above-mentioned buffer area.

[0081] Moreover, the system control section 21 describes the present time in the item of the "time zone or time" about the dialog data (dialog data of the line L11 illustrated to drawing 5 with this operation gestalt) which need to describe the content in the item of "a time zone or time" among each set talk data which constitute a dialog database from these S140 as mentioned above.

[0082] And while reading the present location of vehicles from navigation equipment 9 in S150 continuing, the destination whose intention the user has is read from navigation equipment 9, or it grasps according to the content of a dialog with the user till then, and the their present location and destination which were detected in this way are memorized to the above-mentioned buffer area.

[0083] Moreover, the system control section 21 describes the actual destination in the item of the "destination" about the dialog data (the line L12 illustrated to drawing 5 with this operation gestalt, and dialog data of L13) which need to describe the content in the item of the "destination" among each set talk data which constitute a dialog database from these S150 as mentioned above. Furthermore, the system control section 21 describes an actual present location in the item of the "present location" about the dialog data (dialog data of line L11 -L13 illustrated to drawing 5 with this operation gestalt) which need to describe the content in the item of a "present location" among each set talk data which constitute a dialog database from th se S150 as mention d above.

[0084] Next, by the Internet reference through the communication device 17 etc., by the classification of following ** - **, the system control section 21 checks the seasonal event and event a its present location and near th d stination, and memorizes the r sult to the above-mention d buffer area S160 continuing.

** : seasonal events common to the whole country, such as the N w Y ar and Christmas.

[0085] ** : the event held every year although a f stival etc. is local.
** : the vent h ld to a local and special schedule.
And the dialog data whose content of description of the item of a "classification" is "a greeting" among each set talk data which constitute a dialog database from S170 continuing The d t ction result memorized by the above-mentioned buffer area by processing of the above S140 and S150 out of (the dialog data of the lines L1-L6 specifically illustrated to drawing 4) (a season, a time zone, time, the destination, its present location), The dialog data which suit most the detection result (the environment of the circumference of vehicles, the situation outside a vehicle, in-the-car situation) of the actual situation which was detected by the processing of S200 mentioned later and was memorized by the above-mentioned buffer area are searched. And the text data of the content of the agent utterance described by the item of "activity" of the searched dialog data is further outputted to the speech synthesis section 27, and the utterance for "good morning" and the greeting of "hello" (agent utterance) is made to output from a loudspeaker 7.
[0086] For example, if the present time detected by the above S140 is from 4:00 before 11:00, the dialog data of the line L1 illustrated to drawing 4 will be searched, and the utterance of "good morning" will be performed from a loudspeaker 7. Moreover, if the present time detected by the above S140 is from 11:00 before 18:00, the dialog data of the line L2 illustrated to drawing 4 will be searched, and the utterance of "hello" will be performed from a loudspeaker 7.
[0087] in addition, the 1st time immediately after supplying a power supply to the control unit 1 concerned, as for the processing for this greeting utterance of S170 — or it is carried out only when predetermined conditions when going ahead with a dialog with a user and going are satisfied further Next, the silent state where a sound signal is not inputted through a microphon 5 and the voice input section 25 in S180 the system control section 21 When it judges and a sound signal is inputted within the above-mentioned fixed time (S180:NO), whether it continued more than fixed time set beforehand, and continued While extracting the keyword (utterance keyword) which the user uttered from the sound signal by which the input was carried out [above-mentioned] by progressing to S190, voice input processing which memorizes the extracted keyword to the above-mentioned buffer area is performed. And it progresses to S200 after that.
[0088] Moreover, when it judges with the silent state having continued more than fixed time, and having continued by the above S180 (S180:YES), the contents of "being silent (or no response)" are memorized to the above-mentioned buffer area, and it progresses to it after that S200. And in S200, among the actual situations (real situation) that the user is placed, processing for detecting real situations other than the item detected by the above S140 and S150 (that is, time and being a real situation except spatial the environment of the circumference of vehicles, the situation outside a vehicle, and each fruit situation of an in-the-car situation) is performed, and the detection result is memorized to the above-mentioned buffer area.
[0089] inside [being described by each item of "environment" of a dialog database, "the situation outside a vehicle", and a "in-the-car situation" by processing of S200 here] ** — ** and a real situation are detected just For example, the real situation of the road environment any, such as a highway, an ordinary road, a national highway, and a prefectural road, the roads under present run are among "environment" of the circumference of vehicles, The real situation of the traffic environment where the speed limit of the road under present run and the road under present run are one-way traffic, or it is DO NOT ENTER, Each with the real situation of the geography environment where the current position of vehicles is near marine, or it is in a mountain receives VICS information (information from the broadcast terminal of VICS) by the communication device 17, or detects it based on the information (current position and map data) from navigation equipment 9. And the real situation in the road state of the road under present run having frozen or being asy to slide among "environment" of the circumf rence of v hicles is detected based on the information from other control units which are controlling the brake gear.
[0090] Moreover, each of the real situation of the weathers (b ing fine cloudiness, a light rain, rain, heavy rain, snow, thunder, a typhoon, tc.) of a pres nt location and the destination and th

real situation of the traffic situation of th road under pr s nt run b ing congested, or having become empty is det cted by rec iving VICS information by the communication device 17 among "the situations outside a vehicle." In addition, it is also detectable from the signal of the raindrop sensor of the various sensors 19 that the weather of a its present location rains. And the signal and camera from the ultrasonic sensor of the various sensors 19 detect the real situation of vehicles circumference situations, such as xistence of flattery vehicles, and existence of precedence vehicles, among "the situations outside a vehicle."

[0091] On the other hand, the signal from the temperature sensor of the various sensors 19 detects the real situation of the degree of room air temperature among "in-the-car situations." Moreover, the signal from the pressure sensor which detects the pressure which joins the bearing surface of a sheet detects the real situation of the entrainment state of the number of crews of vehicles (one person, two persons, three persons or more) among "in-the-car situations."

[0092] Among "in-the-car situations", and operational status (a run by the congested passage, a comfortable run, those with oscillating, etc.), An entrainment state (detailed content what man is sitting on the family companion and which seat), Or called it further the move purposes (a drive with a family, a drive with a friend, date with a sweetheart, etc.). About a real situation automatically undetectable using the information from navigation equipment 9, a communication device 17, the various sensors 19, other control units, etc. It detects because I ask by the message displayed on utterance and display 11 from a loudspeaker 7 to a user and have you teach by voice or key input from a user.

[0093] Next, the system control section 21 performs processing for presuming the present demand of a user and a state in S210. The dialog data used for operating a device M3 out of a dialog database by processing of S210 here by processing of the last time of S270 and S280 mentioned later are read. The contents described by both the items of "the presumed demand" of dialog data and "a presumed related demand" which were read it memorizes to the above-mentioned buffer area as a demand presumed that the user has now, and the contents further described by the item of the "presumed state" of the dialog data which carried out [above-mentioned] reading appearance are memorized to the above-mentioned buffer area as a state presumed that the user has become now

[0094] For this reason, when processing of S210 is finished, the present user's user profile (personal information), the keyword (however, silent or the contents of a no response is also included) which the user uttered, the contents showing the real situation that the user is placed, and the contents which presumed the demand of a user and the state will be memorized by the above-mentioned buffer area in RAM.

[0095] Then, in S220 continuing, the system control section 21 accesses a dialog database, and reads each set talk data. The contents described by each item of a "season", "a time zone or time", the "destination", a "present location", "environment", "the situation outside a vehicle", a "in-the-car situation", "a demand", a "state", "personal information", and "user utterance" about each set talk data, Matching with the contents memorized by the above-mentioned buffer area is investigated.

[0096] The content the user specifically presumed matching with the keyword which actually spoke, and the keyword described by the item of "user utterance" of dialog data, and the demand of a user to be, The content which presumed matching with the content described by the item of "a demand" of dialog data, and a user's condition, Each content showing the real situation that matching with the content described by the item of the "state" of dialog data and the user are placed, Matching with the content described by each item of a "season", "the time zone or time" of dialog data, the "destination", a "present location", "environment", "the situation outside a vehicle", and a "in-the-car situation", and the present user's user profile, It investigates about each of matching ** with the content described by the item of the "personal information" on dialog data.

[0097] Moreover, especially in these S220, the dialog data with which the content is d scribed by the item of "a demand" and "user utterance" are preferentially read among the dialog data in a dialog database. And as processing for investigating matching, it gives [predetermined value /

every / (for example, one point)] about each above-m ntioned it m of th read dialog data to the content and match which are memorized by the above-mentioned buffer area, and let the sum total mark be an evaluation value showing the degree of matching. However, you may change mark about the specific item of each item of dialog data.

[0098] And by processing of S220, th line number (namely, number of Line L shown in drawing 4 - drawing 8) is further memoriz d about N dialog data (for xample, eight pieces) sequentially from what has the computed largest evaluation value among each set talk data to a different specific field from the above-mentioned buffer area beforehand set up in RAM.

[0099] And the greatest evaluation value computed by the above S220 in S230 continuing (that is, among N dialog data with which the line number was memorized to the above-mentioned specific field) If the evaluation value of the dialog data whose computed evaluation value is the maximum judges whether it is larger than the threshold set up beforehand and is not larger than the threshold It judges that the contents (a user's utterance keyword or the content of a real situation) which should be detected by processing of S190 or S200 mentioned above are insufficient, and shifts to S240.

[0100] And in these S240, the utterance which asks a user the content of detection which run short is outputted from a loudspeaker 7, and it returns to S180 after that. Then, although processing of S180-S220 will be performed again, when an inquiry to the user by processing of S240 is performed in this way, by S220, an evaluation value is calculated by the above-mentioned specific field only about N dialog data with which the line number was memorized.

[0101] Moreover, when it judges with the greatest evaluation value computed by the above S220 by the above S230 being larger than a threshold, it progresses to S250. In these S250, when it judges whether there are two or more dialog data whose computed evaluation values are the maximum to the above-mentioned specific field and more than one are in it about it among N dialog data with which the line number was memorized, it judges that it is necessary to narrow down one dialog data from two or more of the dialog data, and shifts to S260.

[0102] And in these S260, the utterance which asks a user the content for narrowing down one dialog data from two or more above-mentioned dialog data is outputted from a loudspeaker 7, and it returns to S180 after that. Then, although processing of S180-S220 will be again performed also in this case, when an inquiry to the user by processing of S260 is performed in this way, by S220, an evaluation value is calculated by the above-mentioned specific field only about N dialog data with which the line number was memorized.

[0103] On the other hand, when a negative judging is carried out by the above S250 (i.e., when the number of the dialog data whose evaluation values are the maximum among N dialog data with which the line number was memorized to the above-mentioned specific field is one) It progresses to S270, the dialog data with which the evaluation value became the maximum are read, and the contents described by the item of "activity" of the dialog data are set up in RAM as activity of a device M3. And a device M3 is operated according to the activity set up by the above S270 in S280 continuing.

[0104] That is, among each set talk data which constitute a dialog database from processing of S220-S280 Contents a "season", "a time zone or time", the "destination", a "present location", "environment", "the situation outside a vehicle", a "in-the-car situation", "a demand", a "state", "personal information", and the contents described by each item of "user utterance" are remembered to be by the above-mentioned buffer area (the real situation that the user is placed) The contents to express, the contents which presumed the demand of a user and th state, the present user's user profile, And the dialog data which suited most are searched and chosen as the keyword which the user uttered, and it is made to operate the devices M3 including a loudspeaker 7 according to the contents described by "activity" of the selected dialog data.

[0105] And it judges whether after that, it progressed to S290 and the dialog with a user was completed. In addition, in this judgment, wh n "it being noisy" from a user and th utteranc keyword of "good-bye" are inputted, it judges with the dialog having b en completed, for example. And although it returns to S140 when it judges with th dialog not b ing completed, when it judges with the dialog having been completed, proc ssing of th drawing 3 conc rn d is

nded.
[0106] Next, an example is given and explained about an op ration of th above control units 1. First, if a user utters keywords, such as a "m al" and "boiled rice", when v hicles are running the ordinary road, the dialog data of the line L9 illustrat d to drawing 5 will be chos n by processing of S220-S280, and the cont nts described by the item of "activity" of the dialog data (L9) will be set up as activity of a device M3. A nearby restaurant is searched by th CD-ROM drive or communication device 17 of navigation equipment 9 from a its present location. Consequently, is it "meal from a loudspeaker 7? this — if it becomes closely, there is a store of the <a>, <b>, <c>, etc. affair <X1> Where does it eat? The agent utterance " is outputted.
[0107] On the other hand, line L10 which will be illustrated to drawing 5 by processing of S220-S280 if a user utters keywords, such as a "meal" and "boiled rice", when vehicles are running the highway Dialog data are chosen and the contents described by the item of "activity" of the dialog data (L10) are set up as activity of a device M3. Agent utterance that consequently, it is a part for after <X3> if two near parking areas are searched by the CD-ROM drive or communication device 17 of navigation equipment 9 from a their present location and it is an after <<e> parking area from a loudspeaker 7 to "<d> parking area" is outputted. [of a part for X2 > and a degree]
[0108] Thus, in the control unit 1 of this operation gestalt, the activity of a device M3 is changeable according to the actual situation that not only a user's utterance keyword inputted through a microphone 5 and the voice input section 25 but the user is placed. Therefore, even if a user's content of utterance is the same, according to the situation that the user is placed, activity of a device M3 can be made the optimal and device operation (in the case of this example, it is information offer operation) based on the request of the user by the fewer input from a user can be realized.
[0109] When vehicles are running the ordinary road of Aichi Prefecture and Kariya-shi and a user utters the three keywords "Okazaki", a "meal", and the "India food", on the other hand, by processing of S220-S280 Line L11 illustrated to drawing 5 Dialog data are chosen and the content described by the item of "activity" of the dialog data (L11) is set up as activity of a device M3. Agent utterance that consequently, the time of Restaurant f and Restaurant f of the India food in Aichi Prefecture and Okazaki-shi which can be reserved is searched by the communication device 17 from the Internet etc., and <f> can be reserved to a part for <X5 > at the time of a loudspeaker 7 to " <X4>" is outputted. In addition, the above-mentioned line L11 In dialog data, <Kariya> is described by the item of a "present location" by the processing of S150 till then.
[0110] And it is the above-mentioned line L11 in this way. When dialog data are chosen By th following processing of S210, it is a line L11. The content (a meal, a picnic, a parking lot, a break, drink) described by both the items of "a presumed demand" of dialog data and "a presumed related demand" While the above-mentioned buffer area memorizes as a demand a user is presumed to be, it is a line L11. The content (before [hungry]) described by the item of the "presumed state" of dialog data is memorized by the above-mentioned buffer area as a state where a user is presumed.
[0111] For this reason, the above-mentioned line L11 If especially a user does not answer after the agent utterance according to dialog data is performed Line L12 illustrated to drawing 5 by the following processing of S220-S280 Dialog data (Namely, the dialog data with which the "ordinary road" was described by the item of "environment" and the "meal" and the "parking lot" were described by the item of a "demand") are chosen, and the content described by the item of "activity" of the dialog data (L12) is set up as activity of a device M3. Consequently, the parking lot g near the above-mentioned restaurant f is searched by the communication devic 17 from VICS information etc., and agent utterance of "<g> being vacant as for a parking lot" from the loudspeaker 7 is outputted. In addition, th above-m ntioned line L12 In dialog data, <the restaurant f in Okazaki> and <Kariya> are described by each item of the "destination" and a "present location" by the last processing of S150, r spectively.
[0112] Furthermore, it is the above-mentioned line L12 in this way. When dialog data ar chosen By the following proc ssing of S210, it is a line L12. While th cont nt (path guidance) describ d

by the item of "a presum d demand" of dialog data is memorized by the abov -mention d buff r area as a demand a user is presumed to be Line L12 The content (preparation of movement) described by the item of the "presumed state" of dialog data is memorized by the abov - mentioned buffer area as a state where a user is presumed.

[0113] For this reason, the above-mentioned line L12 If especially a user does not answer aft r the agent utterance according to dialog data is performed Line L13 illustrated to drawing 5 by the following processing of S220-S280 Dialog data (Namely, the dialog data with which the "ordinary road" was described by the item of "environment" and "path guidance" was described by the item of a "demand") are chosen, and the content described by the item of "activity" of the dialog data (L13) is set up as activity of a device M3. Agent utterance of consequently, recommending you to go by <i> since the main passages h and i and the traffic congestion situation of Passages h and i for going to the destination (Aichi Prefecture and Okazaki-shi) from a present location (Aichi Prefecture and Kariya-shi) were searched by the communication device 17 from VICS information etc. and " <h> is crowded from the loudspeaker 7 with the communication device" is outputted. In addition, the above-mentioned line L13 In dialog data, <Okazaki> and <Kariya> are described by each item of the "destination" and a "present location" by the last processing of S150, respectively.

[0114] On the other hand, when the dialog data of a line L9 mentioned above are chosen By the following processing of S210, the contents (a meal, a parking lot, a break, drink) described by both the items of "a presumed demand" of the dialog data of a line L9 and "a presumed related demand" While the above-mentioned buffer area memorizes as a demand a user is presumed to be, the contents (hungry) described by the item of the "presumed state" of the dialog data of a line L9 are memorized by the above-mentioned buffer area as a state where a user is presumed.

[0115] for this reason — for example, if the user uttered the keyword "the place where somewhere is good" and has moreover got on by the family companion in that case, after the agent utterance according to the dialog data of the above-mentioned line L9 is performed Line L14 illustrated to drawing 6 by the following processing of S220-S280 Dialog data (Namely, an "ordinary road" is described by the item of "environment" and a "family companion" is described by the item of a "in-the-car situation".) A "meal" is described by the item of a "demand" and "****" is described by the item of a "state." The dialog data with which "the place where somewhere is good" was described are chosen as the item of "user utterance", and the content described by the item of "activity" of the dialog data (L14) is set up as activity of a device M3. Consequently, from the Internet etc. to a present location, a nearby family restaurant is searched by the communication device 17, and the agent utterance "how it is at OO restaurant" is outputted from a loudspeaker 7 by it.

[0116] While people have ridden on in the car, when the temperature of the vehicle interior of a room is 30 degrees C or more and the demand of a user presumed by processing of S210 moreover is not "air-conditioner operation needlessness", for example, moreover, by processing of S220-S280 Line L20 illustrated to drawing 7 Dialog data are chosen and the content described by the item of "activity" of the dialog data (L20) is set up as activity of a device M3. Consequently, loudspeaker 7 shell "Is it hot? Is air-conditioner setting temperature lowered? Agent utterance of the question " is outputted.

[0117] And it is the above-mentioned line L20 in this way. When dialog data are chosen By the following processing of S210, it is a line L20. While the content (air-conditioner setting temperature is lowered) described by the item of "a presumed demand" of dialog data is memorized by the above-mentioned buffer area as a demand a user is presumed to be Line L20 The content (a hot throat is a dry) described by the item of the "presumed state" of dialog data is memorized by the above-mentioned buffer area as a state where a user is presumed.

[0118] For this reason, the above-mentioned line L20 That a user is in ", and ", and well ["well"] or the keyword of "lowering" is uttered, or it is a no response after the agent utteranc according to dialog data is performed by processing of S220-S280 Line L22 illustrated to drawing 8 Dialog data are chosen and the content described by the item of "activity" of th dialog data (L22) is s t up as activity of a device M3. Consequently, loudspeaker 7 shell "I understand. Air-conditioner setting temp rature is lowered. While the agent utt ranc " is

outputt d, it will operat so that air-conditioner quipm nt 13 may lower th t mp ratur of th vehicle interior of a room.
[0119] On the other hand, the above-mentioned line L20 If a user utt rs "no" and th keyword of "not continuing ["disagreeable" or / this] not lowering" aft r the agent utterance according to dialog data is perform d, ["lowering"] Line L23 illustrated to drawing 8 by processing f S220-S280 Dialog data are chosen and the cont nt described by the item of "activity" of th dialog data (L23) is set up as activity of a device M3. Consequently, while agent utterance of "carrying out with this" from a loudspeaker 7 is outputted, it will operate so that air-conditioner equipment 13 may maintain the temperature of the vehicle interior of a room.
[0120] Moreover, line L21 which will be illustrated to drawing 7 by processing of S220-S280 if a user utters the keyword "******" and "**********" when the temperature of the vehicle interior of a room is 20 degrees C or more Dialog data are chosen and the content described by the item of "activity" of the dialog data (L21) is set up as activity of a device M3. consequently, the case where the dialog data of a line L20 mentioned above are chosen -- the same -- "from a loudspeaker 7 -- hot -- coming out -- a shank Is air-conditioner setting temperature lowered? Agent utterance of the question " is outputted.
[0121] And it is the above-mentioned line L21 in this way. When dialog data are chosen the following processing of S210 -- line L21 The content (air-conditioner setting temperature is lowered --'I want to drink some -- I want to rest) described by both the items of "a presumed demand" of dialog data and "a presumed related demand" While the above-mentioned buffer area memorizes as a demand a user is presumed to be, it is a line L21. The content (a hot throat is a dry) described by the item of the "presumed state" of dialog data is memorized by the above-mentioned buffer area as a state where a user is presumed.
[0122] For this reason, the above-mentioned line L21 If a user is in "and utters "and the keyword of "well" after the agent utterance according to dialog data is performed Line L22 mentioned above by processing of S220-S280 Line L23 mentioned above by processing of S220-S280 when dialog data were chosen and the user uttered conversely "no" and the keyword of being "disagreeable" Dialog data will be chosen.
[0123] That is, in the control unit 1 of this operation gestalt, a demand of a user will be presumed by processing of S210 based on at least one of the actual utterance keyword from a user, a user's real situation, and the activity that actually operated the device M3. And the dialog data which have the demand presumed by processing of S210 as a content of description of the item of a "demand" are chosen by processing of S220-S280, and device operation is performed by it based on the activity described by the item of "activity" of the selected dialog data. In addition, it depends on the description state [whether based on which content, a demand of a user is presumed by processing of S210 among the actual utterance keyword from a user, a user's real situation and the activity of a device M3] of the dialog data used for operating a device M3 by last processing of S280.
[0124] Therefore, according to the control unit 1 of this operation gestalt, device operation (in the case of the above-mentioned example, information offer operation and air-conditioner equipment 13 operate) based more on the request of a user is realizable. When running the ordinary road by the family companion in the time zone from 9:00 to 21:00 and a user, for example, utters keywords, such as "shopping" and "shopping", next, by processing of S220-S280 Line L15 illustrated to drawing 6 Dialog data are chosen and the content described by the item of "activity" of the dialog data (L15) is set up as activity of a device M3. Consequently, the nearby shopping centers j and k are searched by the CD-ROM drive or communication device 17 of navigation equipment 9 from a their present location, and agent utterance of "<j> and <k> being in near if it is shopping" from a loudspeaker 7 is outputted.
[0125] And it is the above-mentioned line L15 in this way. When dialog data are chosen By the following processing of S210, it is a line L15. While the content (shopping, parking lot) d scrib d by both the items of "a pr sumed d mand" of dialog data and "a presumed related demand" is memorized by the above-mentioned buff r area as a demand a user is presumed to be Line L15 The content (preparation of movem nt) described by the it m of the "presumed stat " of dialog data is memorized by the above-mentioned buff r area as a state wh re a user is pr sumed.

[0126] for this reason, the keyword [user] "a usual place" after the ag nt utt ranc according to the dialog data of the above-m ntion d line L15 was performed — speaking — moreov r — the item (P-10: — for the purpose of shopping) of the user's user profile Line L16 which will be illustrated to drawing 6 by the following proc ssing of S220-S280 if the content describ d at the place which goes well is "A d partment store" Dialog data are chosen.
[0127] Namely, "9:00 to 21:00" are described by the item of "a time zone or time." An "ordinary road" is described by the item of "environment" and a "family companion" is described by the item of a "in-the-car situation." "Shopping" is described by the item of a "demand" and "preparation of movement" is described by the item of a "state." The dialog data (L16) with which "it goes to A department store well" was described by the item of "personal information", and "the usual place" was described by the item of "user utterance" are chosen. The content described by the item of "activity" of the dialog data (L16) is set up as activity of a device M3. The target product of the bargain performed at A department store today is searched by the communication device 17 from the Internet etc. Consequently, is it "A department store from a loudspeaker 7? The bargain of OO (for example, electrical machinery supply) is done today. The agent utterance " is outputted. in addition — the above — a line — L — 16 — a dialog — data — setting — "— an individual — information — " — "— activity — " — each — an item — it can set — [—] — inside — **** — S — 130 — processing — present — a user — being peculiar —" — A — a department store — " — describing — having — **** .
[0128] If the content with which a user utters the two keywords "C mountain" and "skiing" at the season of winter, and is moreover described to be by the item (P-8 : hobby) of the user's user profile on the other hand is "skiing" Line L17 illustrated to drawing 6 by processing of S220-S280 Dialog data are chosen and the content described by the item of "activity" of the dialog data (L17) is set up as activity of a device M3. Consequently, agent utterance of "starting the root guide to C mountain skiing area" from a loudspeaker 7 is outputted, and path guidance operation to C mountain skiing area from the present location by navigation equipment 9 is started.
[0129] Moreover, while the content with which a user utters "golf" and two keywords of "being usual", and is moreover described to be by the item (P-8 : hobby) of the user's user profile, for example is "golf" if the content described by the item (P-9: — the place which goes by the purpose of a hobby well) of this user profile is "D golf course" Line L18 illustrated to drawing 6 by processing of S220-S280 Dialog data are chosen and the content described by the item of "activity" of the dialog data (L18) is set up as activity of a device M3. Consequently, is it "D golf course from a loudspeaker 7? Is reservation status investigated? The agent utterance " is outputted. in addition, the above-mentioned line L18 a dialog — data — setting — "— an individual — information — " — "— activity — " — each — an item — it can set — [—] — inside — **** — S — 130 — processing — present — a user — being peculiar — " — D — a golf course — " — describing — having — **** .
[0130] Thus, in the control unit 1 of this operation gestalt, the user profile which is information peculiar to a user is set to one of the parameters at the time of choosing dialog data, and the activity of the device M3 according to the user's user profile is set up. Therefore, device operation adapted to the request peculiar to a user is realizable.
[0131] And while a two or more man-minutes user profile is memorized by the user profile storage section 37, the present user's user profile is specified and it is made to change automatically the content (the content of description of the item of "personal information" and "activity") of a dialog database by processing of S110-S130 according to the specified user profile. And the dialog data which suit the user profile which carried out [above-mentioned] specification are chosen, and it is made to set up the activity of a device M3 according to th content described by the item of "activity" of the dialog data.
[0132] Therefore, even if which man of two or more persons the user profile was rem mber d to be by the user profile storage section 37 uses the control unit 1 conc rned, he can change the activity of a device M3 for every man of the, and can realize d vice operation further bas d on the request p culiar to the user. N xt, line L19 which will be illustrated to drawing 7 by processing of S220-S280 if people have ridd n on in the car, the temperature of the vehicl

interior of a room moreover rises and it b com s 40 degr es C or more Dialog data are chosen and the content described by the item of "activity" of the dialog data (L19) is set up as activity of a device M3. Consequently, the degree of "room air temperature is over 40 degre s C from the loudspeaker 7. Air-conditioner setting temp rature is lowered. While the agent utterance " is outputted, it will operate so that air-conditioner equipment 13 may low r the temperature of the vehicle interior of a room.

[0133] That is, in the control unit 1 of this operation gestalt, dialog data are chosen only from the real situation of the user who detected, and the activity of a device M3 is set up. Therefore, when the situation that the user is placed turns into a specific situation, irrespective of other factors, such as a user's utterance, a device M3 can be operated in predetermined activity, and it is advantageous.

[0134] As explained in full detail above, according to the control unit 1 of this operation gestalt, according to a user's situation and a demand, operation of devices, such as the content of utterance and air-conditioner equipment 13, can be made the optimal, and, moreover, a user can be exactly provided with useful information. Moreover, the dialog which has familiarity with a user can be performed and a sense of closeness can also be given to a user.

[0135] In addition, with this operation gestalt, processing of S180 and S190 is equivalent to the input means M1, processing of S140, S150, and S200 is equivalent to the situation detection means M5, processing of S220-S270 is equivalent to the setting means M9, and processing of S280 is equivalent to the appliance control means M11. And processing of S210 is equivalent to the demand presumption means M13, processing of S110 and S120 is equivalent to the discernment means M19, and processing of S130 is equivalent to the change means M17.

[0136] Moreover, with this operation form, the dialog data-storage section 35 is equivalent to the data-storage means M7 for an activity setup, and the user profile storage section 37 is equivalent to the individual information-storage means M15. And it is lines L9-L11, L15, and L21 among the dialog data illustrated to drawing 4 - drawing 8 . Dialog data It is equivalent to the data D1 for an activity setup, and is line L12 -L14, L20, L22, and L23. Dialog data It is equivalent to the 2nd data D2 for an activity setup, and is line L16 -L18. Dialog data are equivalent to the 3rd data D3 for an activity setup, and it is a line L19. Dialog data are equivalent to the 4th data D4 for an activity setup.

[0137] Next, other examples are explained. First, in the control unit 1 of this operation form, the real situation of the weather is grasped with the instruction from VICS information and the user by the dialog, or the signal from a sensor (S200). In addition, what is necessary is to perform agent utterance of the inquiry "whether it has cleared up now", and just to get replies, such as "that is right" and "disagreeableness and raining", from a user, in receiving instruction from a user.

[0138] Therefore, when the weather is fine, for example, the agent utterance "whether it is WX best to golf today" can be performed, and the dialog which has familiarity to a user can be carried out. moreover -- the case where the agent utterance "whether the now of the autumnal leaves of Arashiyama is best time to see" is performed, or a time zone is daytime when a season is autumn since time, the present four seasons, and a present time zone are grasped in the control unit 1 of this operation form based on the data of the clock built in self (S140) for example, -- "-- is it the time of lunch boiled rice, soon? The next service area is 10km beyond. The agent utterance " can be performed and the dialog which has familiarity to a user can be carried out.

[0139] on the other hand --, a control unit -- one -- grasping -- in the car -- a situation -- inside -- entrainment -- a state -- it is -- which -- a seat -- what -- people -- sitting down -- **** -- or -- ** -- saying -- being detailed -- the contents -- the following -- [--] -- insid -- like -- it can describe .

[SEAT_ID ,PSTYPE,PATYPE,PTYPE ,PROFILE_ID]

In addition, SEAT_ID It is data showing the classification of a s at (sheet), and SEAT_ID =0 shows a driver's seat, SEAT_ID =1 shows a passenger seat, SEAT_ID =2 show the backseat right, SEAT_ID =3 show the cent r of a backseat, and SEAT_ID =4 show the backseat l ft.

[0140] Mor over, PSTYPE is data showing crew's sex, PSTYPE=0 shows xcept human b ings,

such as a load and an animal, PSTYPE=1 shows a male, and PSTYPE=2 show a woman. Furthermore, PATYPE is data showing the classification of crew's age, PATYPE=0 shows an infant, PATYPE=1 shows a small child, PATYPE=2 show a schoolchild, PATYPE=3 show a junior high school student, PATYPE=4 show a high school student, PATYPE=5 show a young man, PATYPE=6 show the man in the street, and PATYPE=7 show an old man.

[0141] And PTYPE Are data showing crew's type and PTYPE =0 shows an operator (driv r). PTYPE =1 shows an operator's spouse and PTYPE =2 show an operator's child. PTYPE =3 show an operator's parents, PTYPE =4 show other families of an operator, PTYPE =5 show intimate persons other than a family, PTYPE =6 show an operator's acquaintance, and PTYPE =7 show other men.

[0142] And PROFILE_ID is data showing crew's name or name further. Therefore, for example, in [SEAT_ID, PSTYPE, PATYPE, PTYPE, and PROFILE_ID] = [2, 1, 2, 2, and OO Taro], it means that OO Taro who is a boy schoolchild and is an operator's child is sitting on the backseat right.

[0143] And when a control unit 1 grasps such a situation, agent utterance like for example, following (1) – (3) and operation corresponding to it can be performed.

(1) The time of vehicles stopping from a run state, "it stopped. When you come out outside Taro and a vehicle, please check back and open a door. Agent utterance of the warning " is performed.

[0144] (2) The time of vehicles departing from a stop state, "depart. The backseat right covers a child protector. While performing the agent utterance ", the child protector of a posterior part right-hand side door is made to be covered over other control units.

(3) The time of a user uttering the two keywords "Taro" and a "TV phone", "introduce the camera of a TV phone to Taro. Whom is the partner who talks? After performing agent utterance of the inquiry ", other control units are made to turn and adjust the position posture and focus of a camera of a TV phone to Taro.

[0145] moreover, for example [SEAT_ID, PSTYPE, PATYPE, PTYPE, and PROFILE_ID] = [2, 2, 6, 1, and OO Hanako] [SEAT_ID, PSTYPE, PATYPE, PTYPE, and PROFILE_ID] =[2, 2, 0, and 2, O Mean holding OO pod the Hanako of whose is moreover a female infant in her child by OO Hanako who is an operator's wife sitting on the backseat right in O pod or].

[0146] And when a control unit 1 grasps such a situation, according to the operation situation of vehicles, it is a sharp curve rightward from "300-meter beyond. Please hold Hanako, a pod, or ****** firmly. Agent utterance of the warning " can be performed.

[0147] On the other hand, the 12-bit data (it is hereafter described as AUDIO_ENV) explained below can describe the content of the audio environment of the in-the-car situations which a control unit 1 grasps again. Namely, AUDIO_ENV When a least significant bit is made into the 0th bit, For example, the 0th the ON/the bit of the OFF of a cassette are shown, and the 1st the ON/the bit of the OFF of a CD player are shown. ON/OFF of MD player are shown, and a triplet eye shows the 2nd the ON/the bit of the OFF of DVD. It is shown whether the 4th bit of the FM broadcasting of radio is received, and it is shown whether the 5th bit of the AM broadcast of radio is received. The 7th the ON/the bit of the OFF of television are shown, the 8th the ON/the bit of the OFF of video are shown, the 9th the ON/the bit of the OFF of a telephone are shown [it is shown whether the 6th bit of the broadcast of a road traffic center is received,], and the 10th bit and the 11th bit are bits of un-using it or a reserve.

[0148] Therefore, for example, in AUDIO_ENV = [1000 0001 0100], it means that a cassette, television, and the telephone are turned on [them]. in addition — this example — [] — the bit by the side of the inner leftmost is the 0th bit And when a control unit 1 grasps such a situation, the following agent utterance and operation corresponding to it can be performed, for example.

[0149] First, the time of a cassette, television, and the telephone being turned on [them] as mentioned above, "he is on the telephone. Please lower the volume of a cassette and television. The agent utteranc " is perform d. Furthermore, when it detected that vehicl s went into the tunnel of a highway, it went into "tunnel. I tell broadcast of a road traffic center. Aft r performing the agent utterance ", the volume of other audios (th y are a cassette and t levision in this case) is lowered. In addition, this b comes AUDIO_ENV = [1000 0011 0100].

[0150] And aft r performing the agent utteranc of "Making a headlight turn on", a h adlight is

made to turn on, when it can come, simultan ously the headlight of v hicl s is not turned on. As mentioned above, this invention cannot be overemphasized by that it is not limited to the above-mentioned operation gestalt, and various gestalten can be taken although 1 operation g stalt of this invention was explained.

[0151] For example, although the control unit 1 of the above-mentioned operation form was carri d in vehicles, it can apply this invention indoors similarly to the equipment which controls various built-in devices. Moreover, although the control unit 1 of the above-mentioned operation form inputted a user's utterance keyword, you may make it input the information by a user's key stroke as information in which the intention of a user was reflected.

[Translation done.]

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TECHNICAL FIELD

[The technical field to which invention belongs] this invention relates to the control unit which operates predetermined devices, such as a device for information retrieval, and a device for voice outputs, according to the input in which the intention of users, such as utterance, a key stroke input, etc. of a user, was reflected.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] That to which a user performs operation corresponding to the voice command by uttering the language beforehand defined as a voice command as navigation equipment for recent years, for example, automobiles, is put in practical use.
[0003] For example, when a user utters the voice command a "present location", while the control section which consists of a microcomputer which accomplishes the center of the equipment concerned makes devices for information retrieval, such as a CD-ROM drive, search the name of a place, an institution, etc. near a its present location with this kind of equipment, it is made to make the voice for guidance "it is near OO" output from the device for voice outputs which consists of a loudspeaker etc. based on the reference result.
[0004] Moreover, when the name of a place is uttered, while the control section of the equipment concerned, for example, makes the device for information retrieval search the circumference map of the name of a place by which utterance was carried out [above-mentioned] after a user utters the voice command "map reference", it is made to display the circumference map of the name of a place by which utterance was carried out [above-mentioned] on the device for a display which consists of CRT etc. based on the reference result.

[Translation done.]

* NOTICES *

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3.In the drawings, any words are not translated.

EFFECT OF THE INVENTION

[A The means for solving a technical problem and an effect of the invention] The control unit of this invention according to claim 1 made in order to attain the above-mentioned purpose is equipped with an input means M1 to input the information in which the intention of a user to this user was reflected, and operates the predetermined device M3 according to the information (henceforth input) inputted by the input means M1 so that it may illustrate to drawing 1 .
[0009] In addition, various things, such as a device for communication by the device for information retrieval with which information is searched from a predetermined database as a device M3, the device for voice outputs which outputs voice, radio, or the cable, air-conditioning equipment, audio equipment, such as television and a tape recorder, devices for a display, such as CRT and liquid crystal, and a lighting device, can be considered. And you may be one, and two or more devices M3 which the control unit concerned operates may reach, and the number of them may be [two or more].
[0010] Moreover, as information which the input means M1 inputs, various things, such as a keyword of the voice which the user uttered, and information by a user's key stroke or switch operation, can be considered. Furthermore, you may make it include no inputting (getting it blocked and a user not inputting information intentionally) as information which the input means M1 inputs.
[0011] Especially the control unit of this invention is equipped with a situation detection means M5 to detect the situation that the user is placed, and the data-storage means M7 for an activity setup, and the data D1 for an activity setup for setting up the activity of a device M3 are memorized by the data-storage means M7 for an activity setup here from the information inputted by the input means M1, and the situation detected by the situation detection means M5.

[0012] And if there is activity to which the setting means M9 searches the activity corresponding to the information inputted by the input means M1 and the situation detected by the situation detection means M5 from the aforementioned data D1 for an activity setup, and corresponds, the activity will be set up as activity of the aforementioned device M3. Then, th appliance control means M11 operates a device M3 according to the activity set up by the aforementioned setting means M9. In addition, in this invention, the content of a do-nothing operation (it is got blocked and don't operate a device M3) is also included as activity of a device M3.
[0013] According to the control unit of such this invention, according to the situation that not only the input from a user inputted by the input means M1 but the user is placed, the activity of a device M3 is changeable. That is, even if the input from a user is the same, according to th situation that the user is placed, activity of a device M3 can be made the optimal. Therefore, device operation adapted to the request of the user is realizable by the fewer input from a us r.
[0014] The control unit according to claim 2 is added and equipped with the demand presumption means M13 to the control unit according to claim 1 so that it may illustrate to drawing 1 . next, this demand presumption means M13 A demand of a user is presumed bas d on at l ast one of the information inputted by the input means M1, the situation detected by the situation detection means M5, and the activity of th device M3 by the appliance control means M11.

[0015] And the 2nd data D2 for an activity s tup for setting up th activity of a device M3 is further memorized by the data-storage means M7 for an activity s tup from at least two or more items including the demand pr sumed by the demand presumption means M13 among th information inputted by the input means M1, the situation detected by the situation d tection means M5, and the demand presumed by the demand presumption means M13.
[0016] The setting means M9 and among the information inputted by the input means M1, the situation detected by the situation detection means M5, and the demand presumed by the demand presumption means M13 If the activity corresponding to at least two or more items including the demand presumed by the demand presumption means M13 is searched from the data D2 for an activity setup of the above 2nd and there is corresponding activity, the activity will be set up as activity of a device M3.
[0017] That is, a demand of a user is presumed based on at least one of the input from a user, the situation detected by the situation detection means M5, and the activity of the device M3 by the appliance control means M11, and it is made to set up the activity of a device M3 for a demand of the user who presumed as one of the parameters in a control unit according to claim 2.
[0018] Therefore, according to such a control unit according to claim 2, device operation based more on the request of a user is realizable. In addition, what is necessary is just to set up beforehand the data D1 for an activity setup, and the 2nd data D2 for an activity setup exclusively so that the activity from which the setting means M9 differs simultaneously from each data D1 and D2 may not be discovered. Moreover, when the priority of reference was prepared in each data D1 and D2, and the setting means M9 searches every one to the activity of each data D1 and D2 according to the priority and has the corresponding activity, you may make it set up the activity as activity of a device M3.
[0019] Next, the control unit according to claim 3 is added and equipped with an individual information-storage means M15 to memorize a user's personal information, to the control unit according to claim 2 so that it may illustrate to drawing 1 . Further and for the data-storage means M7 for an activity setup Among the information inputted by the input means M1, the situation detected by the situation detection means M5, the demand presumed by the demand presumption means M13, and the personal information memorized by the individual information-storage means M15 From at least two or more items including the personal information memorized by the individual information-storage means M15, the 3rd data D3 for an activity setup for setting up the activity of a device M3 is memorized.
[0020] The setting means M9 and among the information inputted by the input means M1, the situation detected by the situation detection means M5, the demand presumed by the demand presumption means M13, and the personal information memorized by the individual information-storage means M15 If the activity corresponding to at least two or more items including the personal information memorized by the individual information-storage means M15 is searched from the data D3 for an activity setup of the above 3rd and there is corresponding activity, the activity will be set up as activity of a device M3.
[0021] According to such a control unit according to claim 3, by memorizing the personal information of the user who actually uses the equipment concerned for the individual information-storage means M15, the user's personal information is set to one of the paramet rs, and the activity of a device M3 will be set up. Therefore, according to this control unit, device operation adapted to the request peculiar to a user can be realized, and it is advantageous.
[0022] In addition, what is necessary is just to set up beforehand the data D1 for an activity setup, the 2nd data D2 for an activity setup, and the 3rd data D3 for an activity setup exclusively so that the activity from which the setting means M9 differs simultaneously from each data D1, D2, and D3 may not be discovered. Moreover, when the priority of reference was prepared in each data D1, D2, and D3, and the setting means M9 searches every one to the activity of each data D1, D2, and D3 according to the priority and has the corresponding activity, you may make it set up the activity as activity of a device M3.
[0023] Next, the control unit according to claim 4 is added and equipp d with the chang means M17 to the control unit according to claim 3 so that it may illustrate to drawing 1 . And th

change means M17 changes the data D3 for an activity setup of the abov 3rd according to th personal information memorized by the individual information-storage means M15.
[0024] According to such a control unit according to claim 4, device op ration which actually us s the equipment concerned and which could change the activity of a device M3 and was further based on the request peculiar to a user for every user is realizable. A control unit according to claim 5 is set to a control unit according to claim 4 so that it may illustrate to drawing 1 . next, for the individual information-storage means M15 While two or more man-minutes personal information is memorized, it has a discernment means M19 to specify the present user's personal information, out of the two or more man-minutes personal information memorized by the individual information-storage means M15.
[0025] And the change means M17 changes the data D3 for an activity setup of the above 3rd according to the personal information specified by the discernment means M19, and in case the setting means M9 searches activity from the data D3 for an activity setup of the above 3rd, the personal information specified by the aforementioned discernment means M19 is used for it.
[0026] According to this control unit according to claim 5, even if which man of two or more persons personal information was remembered to be by the individual information-storage means M15 uses the equipment concerned, he can acquire the effect by the control unit according to claim 4. Next, in the control unit according to claim 6, in the control unit according to claim 1 to 5, the 4th data D4 for an activity setup for setting up the activity of a device M3 is memorized only from the situation detected by the situation detection means M5 by the data-storage means M7 for an activity setup so that it may illustrate to drawing 1 .
[0027] And if the setting means M9 searches the activity corresponding to the situation detected by the situation detection means M5 from the data D4 for an activity setup of the above 4th and has the corresponding activity, the activity will be set up as activity of a device M3. That is, in the control unit according to claim 6, the activity of a device M3 is made to be set up only from the situation detected by the situation detection means M5.
[0028] When the situation that the user is placed turns into a specific situation according to such a control unit according to claim 6, irrespective of other factors, such as input from a user, a device M3 can be operated in predetermined activity, and it is advantageous. For example, when it has the device for voice outputs which outputs voice as a device M3, warning with voice etc. can be performed to a user in a specific situation.
[0029] In addition, what is necessary is just to set up beforehand the 4th data D4 for an activity setup, and other data for an activity setup (D1, D2, D3) exclusively so that the activity from which the setting means M9 differs simultaneously from each data may not be discovered. Moreover, you may prepare the priority of reference in the 4th data D4 for an activity setup, and other data for an activity setup (D1, D2, D3).
[0030] Next, in a control unit according to claim 7, the input means M1 inputs the keyword which the user uttered in a control unit according to claim 1 to 6 as the aforementioned information (information in which the intention of a user was reflected). And a device M3 consists of a device for voice outputs for outputting voice, and other devices.
[0031] According to such a control unit according to claim 7, the appliance control equipment of the interactive mode which operates other devices other than the device for voice outputs can be easily constituted according to the content of a setting of each data D1-D4 for an activity setup which the data-storage means M7 for an activity setup is made to memorize, conversing with a user with voice. It becomes information offer equipment of the interactive mode which can offer exactly the information which the device for information retrieval with which information is searched from a predetermined database, then a user expect a device besides the above especially.
[0032]
[Embodiments of the Invention] Hereafter, the operation form of this invention is explain d using a drawing. Drawing 2 is a block diagram showing the composition of th control unit 1 of an operation form first. In addition, the control unit 1 of this operation form controls various devic s carried in the vehicles, being carried in an automobile (v hicles) and having a dialog with the cr w (mainly operator) and voice of vehicl s as a user.

[0033] As shown in drawing 2 , the control unit 1 of this op rati n gestalt The input unit 3 for a user inputting various kinds of instructions, data, etc. by external operation, The microphon 5 for inputting voice, and the loudspeaker 7 for outputting voice, Th navigation equipment 9 of the common knowledge which performs detection, path guidance, etc. of the current position (its present location) of vehicl s, The display 11 for displaying a picture, and the air-conditioner equipment 13 which controls air-conditioning in the car, The audio equipment 15 which consists of a cassette tape recorder, CD (compact disk) player, MD (mini disc) player, radio, television, etc., The broadcast terminal of well-known VICS (Vehicle Information and Communication System), The communication device 17 which performs data communication by radio between the Internet broadcast terminals which are connection windows with the Internet, It connects with the various sensors 19 for detecting vehicles operational status, such as the vehicle spe d and an acceleration-and-deceleration state, the temperature of vehicles inside and outside, the existence of a raindrop, etc., and other control units (illustration ellipsis) which control the door lock of vehicles, a windowpane (power window), an engine, a brake gear, etc.
[0034] In addition, navigation equipment 9 is equipped with the operation key for the CD-ROM drive for reading data and a user inputting instructions etc. from CD-ROM which memorized data for path guidance, such as GPS equipment of the common knowledge for detecting the current position of vehicles, and map data, name of a place data, institution name data, and its CD-ROM. And if the instructions which direct the path guidance to the destination and the destination through an operation key from a user are inputted, navigation equipment 9 will display a road map including the optimal path for resulting to the current position and the destination of vehicles on display 11, and will perform path guidance. Moreover, if the road map for path guidance is not only displayed, but various pictures, such as a menu for information retrieval, are displayed on display 11 and audio equipment 15 is further set as the mode of television with navigation equipment 9, the receiving picture of television received by the television tuner with which the audio equipment 15 was equipped will be displayed on it.
[0035] And the system control section 21 constituted centering on the microcomputer with which a control unit 1 consists of CPU, a ROM, RAM, etc., The interface 23 which inputs the instructions and data from an input unit 3 into the system control section 21 (I/F), The voice input section 25 which changes into digital data the sound signal inputted from the microphone 5, and is inputted into the system control section 21, The speech synthesis section 27 to which the text data outputted from the system control section 21 is changed into the sound signal of an analog, it outputs to a loudspeaker 7, and singing of the loudspeaker 7 is carried out, It has the above-mentioned navigation equipment 9, display 11, air-conditioner equipment 13, audio equipment 15, a communication device 17, the various sensors 19, and the appliance control interface (appliance control I/F) 29 that connects other control units and system control sections 21 possible [data communication].
[0036] Moreover, the control unit 1 is equipped with the Internet address database 31 which memorizes the address (Internet address) of the Internet, and the reference control section 33 in order to search and acquire the information on desired from the Internet by the communication device 17. And when the system control section 21 outputs the reference keyword showing the content of reference (contents) to the reference control section 33, the reference control section 33 operates a communication device 17 through appliance control I/F29, searches the information corresponding to the above-mentioned reference keyword from the Internet broadcast terminal, and makes the reference result input into the system control section 21. Moreover, in the Internet address database 31, the Internet address used by the reference control section 33 in the past is memorized by the instructions from the system control section 21, and the reference control section 33 will reuse the Internet address in the Internet address database 31, if the same reference keyword as the reference k yword inputted in the past is received from the system control section 21.
[0037] In addition, with this operation gestalt, it is equivalent to the device M3, and h reafter, a loudspeaker 7, navigation equipment 9, the CD-ROM drive (illustration ellipsis) with which the navigation equipm nt 9 was quipp d, display 11, air-condition r quipm nt 13, audio quipment 15, a communication devic 17, and other control units (illustration ellipsis) name these

generically, and call it a device M3. Moreover, among these devic s M3, a loudsp aker 7 is equivalent to the device for voice outputs, and except [it] is quivalent to other d vices.
[0038] And the utterance furth r outputted to a control unit 1 from a loudspeaker 7 As a means to memorize the data for setting up the content (namely, activity of a loudspeaker 7) of (also calling it agent utterance her after), and the activity of a device besides the above of those other than loudspeaker 7 It has the dialog data-storage section 35 which m morizes a dialog database, and the user profile storage section 37 which memorizes a user's two or more man-minutes personal information (henceforth a user profile). In addition, the Internet address database 31 mentioned above with this dialog data-storage section 35 and the user profile storage section 37 is constituted by the non-volatile memory in which read-out and the writing of data are possible.
[0039] Here, the dialog database memorized by the dialog data-storage section 35 and the user profile memorized by the user profile storage section 37 are explained. First, the information that the user profile as personal information memorized by the user profile storage section 37 is peculiar to a user about each item, such as the following - (P-1) (P-11), is described.
[0040] (P-1): Classifications of the man (general, the president, a young man, sex, etc.).
(P-2): Other identification information other than a name or the name for discriminating the man further (a password, identification number, etc.).
(P-3): Birth date (birthday).
[0041] (P-4): Hometown.
(P-5): Address.
(P-6): Occupation.
(P-7): Executive.
[0042] (P-8): Hobby.
(P-9): The place which goes by the purpose of a hobby well.
(P-10): The place which goes by the purpose of shopping well.
(P-11): Family composition, a family's name, and a family's birth date.
[0043] In addition, this user profile is memorized by the user profile storage section 37 by write-in operation of the system control section 21, when a user operates an input unit 3 and inputs the contents of each above-mentioned item. Next, the dialog database memorized by the dialog data-storage section 35 has the data structure of a tabular format for the example, as shown in drawing 4 - drawing 8 . And it sets to drawing 4 - drawing 8 , and they are each lateral lines L1-L23. It is 1 set of dialog data, and the dialog database consists of plurality of such dialog data. In addition, at drawing 4 - drawing 8 , they are each lines L1-L23. It is continued and expressed to two steps.
[0044] Namely, each set talk data which constitute a dialog database The item of a classification of the dialog data, and two or more items showing the situation that the user is placed (with this operation form) The environment of a season, a time zone or time, the destination, a its present location, and the circumference of vehicles, the situation outside a vehicle, and an in-the-car situation, The item of a demand of a user, the item of a user's condition, and the item of a user's personal information, The item of the utterance (henceforth user utterance) of a user inputted through a microphone 5 and the voice input section 25, The item of the activity at the time of the control unit 1 concerned operating a device M3 (the contents of agent utterance, and activity of other devices other than loudspeaker 7), It has the data area for describing corresponding contents about each of the item of the presumed demand which is a demand of a user presumed, the item of the presumed state which is in a user's state presumed, and the item of the presumed related demand which are other demands of a user presumed. And each set talk data describe the contents corresponding to the data area of each above-mentioned item. In addition, description means that the data showing the contents corresponding to the data area secured beforehand are set.
[0045] Here, each item of such a dialog database is explained concretely.
(C-1): The contents as which the dialog data xpresses whether it is a thing about what subj ct in a dialog with a user are b forehand describ d by the item of a classification "a classification", and th contents showing the classification of the agent utteranc described by the it m of

"activity" mentioned especially later are described.
[0046] although there are a greeting, appreciation, a family, a m al, a parking lot, path guidance, reference, shopping, a hobby, device operation, etc. and illustration is not further carri d out as contents described by and this item of "classification", for example so that it may illustrate to drawing 4 - drawing 8 -- in addition, introduction, a sport, and the destination -- it asks a question and checks, and it suits and ****, a halt, an end, etc. ar
[0047] (C-2): The contents which subdivided further the four seasonses, such as any, early summer, midsummer, etc. of the four seasons, such as spring, summer, autumn, and winter, are beforehand described by the seasonal "a season" item.
(C-3): The contents of the concrete time zone called daytime, night, early morning, midnight, etc. and when to when or the detailed time of what minute is described when by the item of a time zone or time "a time zone or time" on what [, what / month / what] in the morning.
[0048] And the item of this "time zone or time" has that the contents are beforehand described to be, and the thing the system control section 21 describes the contents to be serially. For example, the line L15 illustrated as the lines L1-L3 and the dialog data of L7 which are illustrated to drawing 4 to drawing 6 and L16 In dialog data, the contents showing a time zone are beforehand described by the item of "a time zone or time." moreover, line L11 illustrated to drawing 5 a dialog -- data -- setting -- "-- a time zone -- or -- time -- " -- an item -- it can set -- < -- > -- inside -- **** -- system control -- the section -- 21 -- present -- time -- serially -- updating -- having -- describing -- having .
[0049] (C-4): The destination which a user means is described by the system control section 21 by the item of the destination "the destination." In addition, the system control section 21 reads the destination set up by the user from navigation equipment 9, or acquires the contents which should be described in the item of the "destination" according to the contents of a dialog with the user till then.
[0050] And the item of this "destination" has some which are not described to be that the contents are described to be. the line L12 illustrated to drawing 5 and L13 a dialog -- data -- setting -- "-- the destination -- " -- an item -- it can set -- < -- > -- inside -- **** -- system control -- the section -- 21 -- till then -- a user -- a dialog -- the contents -- having responded -- the destination -- describing -- having . [for example,] Moreover, the above-mentioned line L12 illustrated to drawing 4 - drawing 8 and L13 The contents are described by the item of the "destination" in the dialog data of an except.
[0051] (C-5): The present location of vehicles is described by the system control section 21 by the item of a present location "a present location." In addition, the system control section 21 reads the present location of vehicles from navigation equipment 9, and acquires the contents which should be described in the item of a "present location."
[0052] And the item of this "present location" has some which are not described to be that the contents are described to be like the item of the "destination." line L11 -L13 [for example,] illustrated to drawing 5 a dialog -- data -- setting -- "-- a present location -- " -- an item -- it can set -- < -- > -- inside -- **** -- system control -- the section -- 21 -- vehicles -- a present location -- describing -- having . Moreover, above-mentioned line L11 -L13 illustrated to drawing 4 - drawing 8 The contents are described by the item of a "present location" in th dialog data of an except.
[0053] (C-6): The contents showing the environment of the circumference of vehicles are beforehand described by the environmental "environment" item. Specifically, the contents showing road environment, the contents (it is easy to slide on a road surface freeze and a road surface) showing a road (highway, ordinary-road, national highway, prefectural road, etc.) state, the contents (a speed limit, one-way traffic, DO NOT ENTER, etc.) showing traffic environment, and the contents (the inside of the mountain where the sea is near, and a town, before a station, etc.) showing geography environment are described beforehand.
[0054] (C-7): The contents showing the situation outside a vehicle are beforehand described by the item of the situation outside a v hicle "the situation outside a vehicle." The contents which specifically express the weath r of a their present location (being fine cloudiness, a light rain, rain, heavy rain, snow, thunder, a typhoon, etc.), The contents (b ing fine cloudiness, a light rain,

rain, heavy rain, snow, thunder, a typhoon, etc.) showing the w ath r of the d stination, the contents (traffic congestion, the occurrence of accident which it is cong st d and has become empty a little) showing a traffic situation, and the contents (those with passing vehicles, those with flattery vehicles, those with preced nce vehicles, etc.) showing a vehicles circumf rence situation are described befor hand. In addition, as contents showing a vehicles circumf rence situation, the classification (a truck, a passenger car, motorbike, etc.) of passing vehicles or flattery vehicles can also be added and described.

[0055] (C-8): The contents showing a situation in the car are beforehand described by the item of an in-the-car situation "an in-the-car situation." The contents which specifically express operational status (a run by the congested road, a comfortable run, those with oscillating, spe d over, etc.), the contents (one person and two persons — many (three or more persons) — a family companion — or further) showing an entrainment state Contents showing the degree of vehicle room air temperature, such as detailed contents what man is sitting on which seat, the contents (a drive, with a family, a drive with a friend, date with a sweetheart, etc.) showing the move purpose, the contents showing audio environment, etc. are described beforehand.

[0056] (C-9): The contents showing the demand considered that a user has in the item of a demand "a demand" are described beforehand. Specifically, the contents of air-conditioner operation needlessness etc. which lower a meal, a drink, shopping, a drive, a break, play, a park, an amusement park, a theme park, boring, tennis, a pool, a jogging, sea bathing, skiing, golf, golf course reservation, path guidance, a parking lot, and air-conditioner setting temperature and which raise air-conditioner setting temperature are described.

[0057] (C-10): The contents showing the mental state or corporal state considered that a user becomes are beforehand described by the item of a state "a state." concrete — hungry — being hungry — before — movement — preparation (it is going to move — a state) — good condition — usual — being hot — a throat — a dry — energy — lively — a drive — enjoying oneself — **** — a meal — inside — music — appreciation — inside — television — appreciation — inside — a full stomach — fatigue — returning — ** — playing — ** — early — the destination — reaching — ** — a break — inside — being irritated — **** — getting angry — ****

[0058] (C-11): The contents of the item relevant to the contents of description of other items (especially, "a classification", "a demand", "user utterance", "activity") in the dialog data are described by the item of personal information "personal information" among each item (P-1 to P-11) of a user profile mentioned above.

[0059] And there are that the contents of fixation are beforehand described to be as an item of this "personal information", and a thing by which the contents of description are changed by the system control section 21 according to the user profile actually memorized by the user profile storage section 37. For example, in the dialog data of the line L8 illustrated to drawing 4 , the contents (this example those with a child) corresponding to the item of the (P-11:family composition) of a user profile are beforehand described by the item of "personal information." Moreover, in the dialog data of the line L17 illustrated to drawing 6 , the contents (at this example, skiing is a hobby) corresponding to the item of a (P-8:hobby) of a user profile are beforehand described by the item of "personal information."

[0060] on the other hand, line L16 illustrated to drawing 6 a dialog — data — setting — "— an individual — information — " — an item — it can set — [—] — inside — **** — system control — the section — 21 — a user profile — (— P - ten — : — shopping — the purpose — good — going — a place —) — an item — describing — having had — the contents (this example A department store) — describing — having . moreover, line L18 illustrated to drawing 6 a dialog — data — setting — "— an individual — information — " — an item — it can set — [—] — inside — **** — system control — th section — 21 — a user profile — (— P - nine — : — a hobby — the purpose — good — going — a place —) — an item — describing — having had — the cont nts (this example D golf course) — describing — having .

[0061] the above-mentioned line L16 and L18 "— an individual — information — " — an item — **** — beforehand — a user profile — each — an item — insid — any — an item — describing — having had — th contents — [—] — inside — d scribing — a thing — being

shown — directions — data — setting — having — **** — system control — the section — 21 — the above — directions — data — being based — "— an individual — information — " — an item Therefore, the above-mentioned line L16 and L18 The contents of description of the item of "personal information" will be changed into the user profile storage section 37 according to the actually memorized user profile.

[0062] In addition, the above-mentioned line L18 The contents of a hobby in golf are also beforehand described by the item of the "personal information" in dialog data.

(C-12): The keyword under utterance of the user expected to be inputted through a microphone 5 and the voice input section 25 is beforehand described by the item of user utterance "user utterance." And with this operation form, the keyword group described by the item of this "user utterance" serves as a recognition vocabulary of the control unit 1 concerned.

[0063] However, line L11 illustrated to drawing 5 The keyword described in < <>> according to the item of "user utterance" in dialog data is a variable data supposing the proper noun showing the name of a place being inputted, and the keyword described in [] is a variable data supposing the language showing the kind of cooking being inputted. Moreover, line L17 illustrated to drawing 6 The keyword described in < <>> according to the item of "user utterance" in dialog data is a variable data supposing the proper noun showing the name of a mountain being inputted.

[0064] (C-13): The activity of the device M3 corresponding to the contents which the activity at the time of the control unit 1 concerned operating a device M3 (the contents of the agent utterance which should be outputted from a loudspeaker 7, and activity of other devices oth r than loudspeaker 7) is beforehand described, and described by the dialog data especially in the above (C-1) of – (C-12) and each item is described by the item of activity "activity."

[0065] For example, while making the CD-ROM drive or communication device 17 with which navigation equipment 9 was equipped search a nearby restaurant from a its present location in the item of "activity", is it "meal from a loudspeaker 7 in the dialog data of the line L9 illustrated to drawing 5 , based on the reference result? this — if it becomes closely, there is a store of the <a>, <b>, <c>, etc. affair <X1> Where does it eat? The activity of the device M3 of making the agent utterance " output is described beforehand. In addition, a communication device 17 is made to communicate with the Internet broadcast terminal, and is made to search required information from the Internet.

[0066] Moreover, line L10 illustrated to drawing 5 In dialog data in the item of "activity" While making the above-mentioned CD-ROM drive or a communication device 17 search two near parking areas (or service area) from a its present location If it is an after <<e> parking area to a parking area, it is a part for after <X3 >. the reference result — being based — "<d> from a loudspeaker 7 — [of a part for X2 >, and a degree] The activity of the device M3 of making the agent utterance " output is described beforehand.

[0067] Furthermore, for example, in the dialog data of the line L19 illustrated to drawing 7 , the degree of "room air temperature is over 40 degrees C from the loudspeaker 7 in the item of "activity." Air-conditioner setting temperature is lowered. While making the agent utterance " output, the activity of the device M3 of making the temperature of the vehicle interior of a room lowered to air-conditioner equipment 13 is described beforehand.

[0068] in addition — drawing 5 — and — drawing 6 — setting — "— activity — " — an item — indicating — having had — < — > — inside — a character — inside — a — from — k — up to — the alphabet — O — O — a restaurant — and — C — a mountain — a skiing area — Th proper noun obtained by reference operation (specifically, a, b, c, f, and OO restaurant) The searched restaurant name, the parking-area name with which d and e were searched, the parking lot name with which g was searched, the road name with which h and i were searched, and the shopping center name with which j and k were searched — it is — X1 from — X5 up to — the sign which starts in X Numeric values acquired by reference operation, such as a number and time It is (the numeric value which sp cifically expresses the time of the restaurant f where th numeric value showing the total number of cases, such as the restaurants a, b, and c wh re X1 was searched, X2, the num ric value showing the duration to the parking areas d and e with which Xthree was search d, X4, and X5 were searched which can be reserved).

[0069] As an item of "activity", th re are some by which the contents of d scription ar

changed by the syst m control section 21 according to th us r profile actually memoriz d by the user profile storage section 37 like the item of "p rsonal information" on th other hand further. ** for example, line L16 illustrated to drawing 6 [] [in / the item of "activity" / on dialog data and] — inside, the contents (this example A department store) described by the (item which goes by the purpose of P-10:shopping well) of a user profile are described by the system control section 21 moreover, line L18 illustrat d to drawing 6 [] [in / the item of "activity" / on dialog data and] — inside, the contents (this example D golf course) described by the (item which goes by the purpose of a P-9:hobby well) of a user profile are described by the system control section 21

[0070] the above-mentioned line L16 and L18 "— activity — " — an item — **** — beforehand — a user profile — each — an item — inside — any — an item — describing — having had — the contents — [—] — inside — describing — a thing — being shown — directions — data — setting — having — **** — system control — the section — 21 — the above — directions — data — being based — "— activity — " — an item — it can set — [Therefore, the above-mentioned line L16 and L18 The contents of description of the item of "activity" (in the case of this example the contents of agent utterance) will be changed into the user profile storage section 37 according to the actually memorized user profile.

[0071] as the activity of the device M3 which the item of "activity" of the line L16 illustrated to drawing 6 shows when it explains concretely — above — [] — while making a communication device 17 search from the Internet the target product of the bargain performed at A department store described inside today, is it "A department store from a loudspeaker 7 based on the reference result? The bargain of OO (for example, electrical machinery supply) is done today. It becomes a thing of making the agent utterance " output. moreover — as the activity of the device M3 which the item of "activity" of the line L18 illustrated to drawing 6 shows — above — [] — is it "D golf course from a loudspeaker 7 based on the contents (D golf course) described inside? Is reservation status investigated? It becomes a thing of making the agent utterance " output.

[0072] (C-14): In the item of a presumed demand "a presumed demand" While the actual situation that the user is placed turns into a situation described in the item (C-2 to C-8) of the situation in the dialog data A user utters the keyword described by the item (C-12) of "user utterance" in the dialog data. Furthermore, when it is assumed that device operation described in the item (C-13) of the "activity" in the dialog data was actually performed, the content of the demand sensibly considered that a user has is described beforehand.

[0073] And the variation (kind) of the content described by the item of this "presumed demand" is the same as that of the content described by the item of a "demand" mentioned above.

(C-15): In the item of a presumed state "a presumed state" While turning into a situation described in the item (C-2 to C-8) of the situation in the dialog data, the actual situation that the user is placed as well as the item of a "presumed demand" A user utters the keyword described by the item (C-12) of "user utterance" in the dialog data. Furthermore, when it is assumed that device operation described in the item (C-13) of the "activity" in the dialog data was actually performed, the content in the state where it is thought sensibly that a user becomes is described beforehand.

[0074] And the variation of the content described by the item of this "presumed state" is the same as that of the content described by the item in the "state" where it mentioned above.

(C-16): The content of demand with the another content described in the item of "a presum d demand" in the dialog data among the demands sensibly considered that a user has in the item of a presumed related demand "a presumed related demand" based on the same assumption as the item of the above "a presumed demand" is described beforehand.

[0075] And the variation of the content described by the item of this "presumed related demand" is the sam as that of the content described by the item of a "demand" mentioned above. In addition, in this operation gestalt, although the content is describ d by all dialog data about two items of "a classification" and "activity" as shown in drawing 4 - drawing 8 , th content may not be described about oth r items. That is, the portion of the blank in drawing 4 - drawing 8 shows that th cont nt is not described. And according to the content described in

the item of "activity", it should just determine wheth r the content is described in which it ms other than "a classification" and "activity." However, the corresponding content is describ d by at least one or more items among items oth r than "a classification" and "activity."

[0076] Next, in the control unit 1 of this operation gestalt constituted as mentioned above, the processing performed in the system control s ction 21 is explained using drawing 3 . As shown in drawing 3 , when vehicles are ignition switched off (illustration ellipsis) and a power supply is supplied to the control unit 1 concerned, the system control section 21 At Step (it is hereafter described as "S") 110, it first minds any with an input unit 3, I/F23 and a microphone 5, and the voice input section 25 they are. The identification information (for example, a name, a password, an identification number, a card number, etc.) from the present user (user) inputted as a key input or voice is read. In addition, you may make it read the information on an ID card as identification information.

[0077] And the user profile the content (a name and other identification information) described by the item (P-2) mentioned above out of the two or more man-minutes user profile memorized by the user profile storage section 37 in S120 continuing and whose identification information read by the above S110 correspond is specified, and the specified user profile is memorized to the buffer area beforehand set up in RAM as the present user's user profile.

[0078] And a content setup of the dialog database in the dialog data-storage section 35 is further performed in S130 continuing using the user profile memorized to the above-mentioned buffer area. That is, based on the directions data, the content of the user profile in the above-mentioned buffer area is described about the dialog data with which the directions data mentioned above among each set talk data which constitute a dialog database are set. the line L16 illustrated to drawing 6 by this processing of S130 and L18 a dialog -- data -- it can set -- "-- an individual -- information -- " -- "-- activity -- " -- each -- an item -- [--] -- inside -- present -- a user -- being peculiar -- the content -- describing -- having -- ******** .
[and]

[0079] Furthermore, in these S130, the content of the agent utterance described by the item of "activity" of a dialog database is changed to that from which a tone differs according to the instructions from a user inputted through an input unit 3 and I/F23. That is, in the control unit 1 of this operation gestalt, the character on utterance of the equipment 1 concerned (tone) can be changed now into condition, such as the man in the street, the president, a young man, a friend, and a girl, corresponding to the instructions from a user. In addition, the content of the agent utterance illustrated to drawing 4 - drawing 8 is standard form when a user specifies the "man in the street."

[0080] Next, in order that the system control section 21 may search the dialog data which suited the actual situation that the user was placed from the dialog database by processing after S220 later mentioned in S140 Based on the data of the clock built in self, time (a year, the moon, a day, time), the present four seasons, a present time zone, etc. detect the actual situation corresponding to the "season" of a dialog database, and the item of "a time zone or time", and memorize the detection result to the above-mentioned buffer area.

[0081] Moreover, the system control section 21 describes the present time in the item of the "time zone or time" about the dialog data (dialog data of the line L11 illustrated to drawing 5 with this operation gestalt) which need to describe the content in the item of "a time zone or time" among each set talk data which constitute a dialog database from these S140 as mentioned above.

[0082] And while reading the present location of vehicles from navigation equipment 9 in S150 continuing, the destination whose intention the user has is read from navigation equipment 9, or it grasps according to the content of a dialog with the user till then, and the their present location and destination which were detected in this way are memorized to the above-mentioned buffer area.

[0083] Moreover, the system control section 21 describes the actual destination in the item f the "destination" about the dialog data (the line L12 illustrated to drawing 5 with this operation gestalt, and dialog data of L13) which n d to d scribe the cont nt in the it m of the "destination" among each set talk data which constitute a dialog database from these S150 as

mentioned above. Furthermore, the system control section 21 describ s an actual pr sent location in the item of the "present location" about the dialog data (dialog data of line L11 -L13 illustrated to drawing 5 with this operation gestalt) which need to describe the content in the item of a "present location" among each set talk data which constitute a dialog database from these S150 as mentioned above.

[0084] Next, by the Internet reference through the communication device 17 etc., by the classification of following ** - **, the system control section 21 checks the seasonal event and event a its present location and near the destination, and memorizes the result to the above-mentioned buffer area S160 continuing.

** : seasonal events common to the whole country, such as the New Year and Christmas.

[0085] ** : the event held every year although a festival etc. is local.

** : the event held to a local and special schedule.

And the dialog data whose content of description of the item of a "classification" is "a greeting" among each set talk data which constitute a dialog database from S170 continuing The detection result memorized by the above-mentioned buffer area by processing of the above S140 and S150 out of (the dialog data of the lines L1-L6 specifically illustrated to drawing 4) (a season, a time zone, time, the destination, its present location), The dialog data which suit most the detection result (the environment of the circumference of vehicles, the situation outside a vehicle, in-the-car situation) of the actual situation which was detected by the processing of S200 mentioned later and was memorized by the above-mentioned buffer area are searched. And the text data of the content of the agent utterance described by the item of "activity" of the searched dialog data is further outputted to the speech synthesis section 27, and the utterance for "good morning" and the greeting of "hello" (agent utterance) is made to output from a loudspeaker 7.

[0086] For example, if the present time detected by the above S140 is from 4:00 before 11:00, the dialog data of the line L1 illustrated to drawing 4 will be searched, and the utterance of "good morning" will be performed from a loudspeaker 7. Moreover, if the present time detected by the above S140 is from 11:00 before 18:00, the dialog data of the line L2 illustrated to drawing 4 will be searched, and the utterance of "hello" will be performed from a loudspeaker 7.

[0087] in addition, the 1st time immediately after supplying a power supply to the control unit 1 concerned, as for the processing for this greeting utterance of S170 -- or it is carried out only when predetermined conditions when going ahead with a dialog with a user and going are satisfied further Next, the silent state where a sound signal is not inputted through a microphone 5 and the voice input section 25 in S180 the system control section 21 When it judges and a sound signal is inputted within the above-mentioned fixed time (S180:NO), whether it continued more than fixed time set beforehand, and continued While extracting the keyword (utterance keyword) which the user uttered from the sound signal by which the input was carried out [above-mentioned] by progressing to S190, voice input processing which memorizes the extracted keyword to the above-mentioned buffer area is performed. And it progresses to S200 after that.

[0088] Moreover, when it judges with the silent state having continued more than fixed time, and having continued by the above S180 (S180:YES), the content of "being silent (or no response)" is memorized to the above-mentioned buffer area, and it progresses to it after that S200. And in S200, among the actual situations (real situation) that the user is placed, processing for detecting real situations other than the item detected by the above S140 and S150 (that is, time and being a real situation except spatial the environment of the circumference of vehicles, the situation outside a vehicle, and each fruit situation of an in-the-car situation) is performed, and the detection result is memorized to the above-mentioned buffer area.

[0089] inside [being described by each item of "environment" of a dialog database, "the situation outside a vehicle", and a "in-the-car situation" by processing of S200 here] ** -- ** and a real situation are d t cted just For example, the real situation of the passage environm nt any, such as a highway, an ordinary road, a national highway, and a prefectural road, th passages under present run ar among "environment" of the circumference of vehicl s, The real situation of the traffic environment wh re the speed limit of the passage under pres nt run and

the passage under present run are one-way traffic, or it is DO NOT ENTER, Each with th r al situation of the geography environment where the current position of vehicl s is n ar marine, or it is in a mountain receives VICS information (information from the broadcast terminal of VICS) by the communication device 17, or detects it based on the information (current position and map data) from navigation equipment 9. And the real situation in the passage state of the passage under present run having frozen or being easy to slide among "environment" of the circumference of vehicles is detected based on the information from other control units which are controlling the brake gear.

[0090] Moreover, each of the real situation of the weathers (being fine cloudiness, a light rain, rain, heavy rain, snow, thunder, a typhoon, etc.) of a present location and the destination and the real situation of the traffic situation of the passage under present run being congested, or having become empty is detected by receiving VICS information by the communication device 17 among "the situations outside a vehicle." In addition, it is also detectable from the signal of the raindrop sensor of the various sensors 19 that the weather of a its present location rains. And the signal and camera from the ultrasonic sensor of the various sensors 19 detect the real situation of vehicles circumference situations, such as existence of flattery vehicles, and existence of precedence vehicles, among "the situations outside a vehicle."

[0091] On the other hand, the signal from the temperature sensor of the various sensors 19 detects the real situation of the degree of room air temperature among "in-the-car situations." Moreover, the signal from the pressure sensor which detects the pressure which joins the bearing surface of a sheet detects the real situation of the entrainment state of the number of crews of vehicles (one person, two persons, three persons or more) among "in-the-car situations."

[0092] Among "in-the-car situations", and operational status (a run by the congested passage, a comfortable run, those with oscillating, etc.), An entrainment state (detailed content what man is sitting on the family companion and which seat), Or called it further the move purposes (a drive with a family, a drive with a friend, date with a sweetheart, etc.). About a real situation automatically undetectable using the information from navigation equipment 9, a communication device 17, the various sensors 19, other control units, etc. It detects because I ask by the message displayed on utterance and display 11 from a loudspeaker 7 to a user and have you teach by voice or key input from a user.

[0093] Next, the system control section 21 performs processing for presuming the present demand of a user and a state in S210. The dialog data used for operating a device M3 out of a dialog database by processing of S210 here by processing of the last time of S270 and S280 mentioned later are read. The content described by both the items of "the presumed demand" of dialog data and "a presumed related demand" which were read it memorizes to the above-mentioned buffer area as a demand presumed that the user has now, and the content further described by the item of the "presumed state" of the dialog data which carried out [above-mentioned] reading appearance is memorized to the above-mentioned buffer area as a state presumed that the user has become now

[0094] For this reason, when processing of S210 is finished, the present user's user profile (personal information), the keyword (however, silent or the content of a no response is also included) which the user uttered, the content showing the real situation that the user is plac d, and the content which presumed the demand of a user and the state will be memorized by the above-mentioned buffer area in RAM.

[0095] Then, in S220 continuing, the system control section 21 accesses a dialog database, and reads each set talk data. The content described by each item of a "season", "a time zone or time", the "destination", a "present location", "environment", "the situation outside a vehicle", a "in-the-car situation", "a demand", a "state", "personal information", and "user utterance" about each set talk data, Matching with the content memorized by the above-mentioned buffer area is investigated.

[0096] The content the user specifically presumed matching with the k yword which actually spoke, and the keyword described by the it m of "user utterance" of dialog data, and the demand of a user to be, The content which presumed matching with the content describ d by

the item of "a demand" of dialog data, and a user's condition, Each cont nt showing th r al situation that matching with the cont nt described by th item of the "state" of dialog data and the user are placed, Matching with the content described by each item of a "season", "th time zone or time" of dialog data, the "destination", a "present location", "environment", "the situation outside a vehicle", and a "in-the-car situation", and the present user's user profile, It investigates about each of matching ** with the content described by the item of the "personal information" on dialog data.

[0097] Moreover, especially in these S220, the dialog data with which the content is described by the item of "a demand" and "user utterance" are preferentially read among the dialog data in a dialog database. And as processing for investigating matching, it gives [predetermined value / every / (for example, one point)] about each above-mentioned item of the read dialog data to the content and match which are memorized by the above-mentioned buffer area, and let the sum total mark be an evaluation value showing the degree of matching. However, you may change mark about the specific item of each item of dialog data.

[0098] And by processing of S220, the line number (namely, number of Line L shown in drawing 4 - drawing 8) is further memorized about N dialog data (for example, eight pieces) sequentially from what has the computed largest evaluation value among each set talk data to a different specific field from the above-mentioned buffer area beforehand set up in RAM.

[0099] And the greatest evaluation value computed by the above S220 in S230 continuing (that is, among N dialog data with which the line number was memorized to the above-mentioned specific field) If the evaluation value of the dialog data whose computed evaluation value is the maximum judges whether it is larger than the threshold set up beforehand and is not larger than the threshold It judges that the contents (a user's utterance keyword or the content of a real situation) which should be detected by processing of S190 or S200 mentioned above are insufficient, and shifts to S240.

[0100] And in these S240, the utterance which asks a user the content of detection which run short is outputted from a loudspeaker 7, and it returns to S180 after that. Then, although processing of S180-S220 will be performed again, when an inquiry to the user by processing of S240 is performed in this way, by S220, an evaluation value is calculated by the above-mentioned specific field only about N dialog data with which the line number was memorized.

[0101] Moreover, when it judges with the greatest evaluation value computed by the above S220 by the above S230 being larger than a threshold, it progresses to S250. In these S250, when it judges whether there are two or more dialog data whose computed evaluation values are the maximum to the above-mentioned specific field and more than one are in it about it among N dialog data with which the line number was memorized, it judges that it is necessary to narrow down one dialog data from two or more of the dialog data, and shifts to S260.

[0102] And in these S260, the utterance which asks a user the content for narrowing down one dialog data from two or more above-mentioned dialog data is outputted from a loudspeaker 7, and it returns to S180 after that. Then, although processing of S180-S220 will be again performed also in this case, when an inquiry to the user by processing of S260 is performed in this way, by S220, an evaluation value is calculated by the above-mentioned specific field only about N dialog data with which the line number was memorized.

[0103] On the other hand, when a negative judging is carried out by the above S250 (i.e., when the number of the dialog data whose evaluation values are the maximum among N dialog data with which the line number was memorized to the above-mentioned specific field is one) It progresses to S270, the dialog data with which the evaluation value became the maximum are read, and the content described by the item of "activity" of the dialog data is set up in RAM as activity of a device M3. And a device M3 is operated according to the activity set up by the above S270 in S280 continuing.

[0104] That is, among each set talk data which constitute a dialog database from processing of S220-S280 The content a "season", "a time zone or time", the "destination", a "pres nt location", "environment", "the situation outside a vehicl ", a "in-the-car situation", "a demand", a "state", "personal information", and the content described by each item of "us r utt rance" are remembered to be by the abov -mention d buffer area (the real situation that

the us r is placed) The content to expr ss, the content which presumed th demand of a user and the state, the present us r's user profile, And the dialog data which suit d most are searched and chosen as the keyword which the user uttered, and it is made to operate the devices M3 including a loudspeaker 7 according to the content described by "activity" of the selected dialog data.

[0105] And it judges whether after that, it progressed to S290 and the dialog with a user was completed. In addition, in this judgment, when "it being noisy" from a user and the utterance keyword of "good-bye" are inputted, it judges with the dialog having been completed, for example. And although it returns to S140 when it judges with the dialog not being completed, when it judges with the dialog having been completed, processing of the drawing 3 concerned is ended.

[0106] Next, an example is given and explained about an operation of the above control units 1. First, if a user utters keywords, such as a "meal" and "boiled rice", when vehicles are running the ordinary road, the dialog data of the line L9 illustrated to drawing 5 will be chosen by processing of S220-S280, and the content described by the item of "activity" of the dialog data (L9) will be set up as activity of a device M3. A nearby restaurant is searched by the CD-ROM drive or communication device 17 of navigation equipment 9 from a its present location. Consequently, is it "meal from a loudspeaker 7? this -- if it becomes closely, there is a store of the <a>, <b>, <c>, etc. affair <X1> Where does it eat? The agent utterance " is outputted.

[0107] On the other hand, line L10 which will be illustrated to drawing 5 by processing of S220-S280 if a user utters keywords, such as a "meal" and "boiled rice", when vehicles are running the highway Dialog data are chosen and the content described by the item of "activity" of the dialog data (L10) is set up as activity of a device M3. Agent utterance that consequently, it is a part for after <X3> if two near parking areas are searched by the CD-ROM drive or communication device 17 of navigation equipment 9 from a their present location and it is an after <<e> parking area from a loudspeaker 7 to "<d> parking area" is outputted. [of a part for X2 > and a degree]

[0108] Thus, in the control unit 1 of this operation gestalt, the activity of a device M3 is changeable according to the actual situation that not only a user's utterance keyword inputted through a microphone 5 and the voice input section 25 but the user is placed. Therefore, even if a user's content of utterance is the same, according to the situation that the user is placed, activity of a device M3 can be made the optimal and device operation (in the case of this example, it is information offer operation) based on the request of the user by the fewer input from a user can be realized.

[0109] When vehicles are running the ordinary road of Aichi Prefecture and Kariya-shi and a user utters the three keywords "Okazaki", a "meal", and the "India food", on the other hand, by processing of S220-S280 Line L11 illustrated to drawing 5 Dialog data are chosen and the content described by the item of "activity" of the dialog data (L11) is set up as activity of a device M3. Agent utterance that consequently, the time of Restaurant f and Restaurant f of the India food in Aichi Prefecture and Okazaki-shi which can be reserved is searched by the communication device 17 from the Internet etc., and <f> can be reserved to a part for <X5 > at the time of a loudspeaker 7 to " <X4>" is outputted. In addition, the above-mentioned line L11 In dialog data, <Kariya> is described by the item of a "present location" by the processing of S150 till then.

[0110] And it is the above-mentioned line L11 in this way. When dialog data are chosen By the following processing of S210, it is a line L11. The contents (a meal, a picnic, a parking lot, a break, drink) described by both the items of "a presumed demand" of dialog data and "a presumed related demand" While the above-mentioned buffer area memorizes as a demand a user is presumed to be, it is a line L11. The contents (before [hungry]) described by the item of the "presumed state" of dialog data are m moriz d by the above-mentioned buffer area as a state where a user is presumed.

[0111] For this reason, the above-mentioned line L11 If esp cially a user does not answer after the agent utterance according to dialog data is performed Lin L12 illustrated to drawing 5 by the following processing of S220-S280 Dialog data (Namely, the dialog data with which the

"ordinary road" was describ d by the item of "environment" and th "meal" and th "parking lot" w re described by the it m of a "demand") are chosen, and the content described by the item of "activity" of the dialog data (L12) is set up as activity of a device M3. Cons quently, the parking lot g near the above-mentioned restaurant f is searched by the communication device 17 from VICS information etc., and ag nt utterance of "<g> being vacant as for a parking lot" from the loudspeaker 7 is outputted. In addition, the above-mentioned line L12 In dialog data, <the restaurant f in Okazaki> and <Kariya> are described by each item of the "destination" and a "present location" by the last processing of S150, respectively.

[0112] Furthermore, it is the above-mentioned line L12 in this way. When dialog data are chosen By the following processing of S210, it is a line L12. While the contents (path guidance) described by the item of "a presumed demand" of dialog data are memorized by the above-mentioned buffer area as a demand a user is presumed to be Line L12 The contents (preparation of movement) described by the item of the "presumed state" of dialog data are memorized by the above-mentioned buffer area as a state where a user is presumed.

[0113] For this reason, the above-mentioned line L12 If especially a user does not answer after the agent utterance according to dialog data is performed Line L13 illustrated to drawing 5 by the following processing of S220-S280 Dialog data (Namely, the dialog data with which the "ordinary road" was described by the item of "environment" and "path guidance" was described by the item of a "demand") are chosen, and the contents described by the item of "activity" of the dialog data (L13) are set up as activity of a device M3. Agent utterance of consequently, recommending you to go by <i> since the main roads h and i and the traffic congestion situation of Roads h and i for going to the destination (Aichi Prefecture and Okazaki-shi) from a present location (Aichi Prefecture and Kariya-shi) were searched by the communication device 17 from VICS information etc. and " <h> is crowded from the loudspeaker 7 with the communication device" is outputted. In addition, the above-mentioned line L13 In dialog data, <Okazaki> and <Kariya> are described by each item of the "destination" and a "present location" by the last processing of S150, respectively.

[0114] On the other hand, when the dialog data of a line L9 mentioned above are chosen By the following processing of S210, the contents (a meal, a parking lot, a break, drink) described by both the items of "a presumed demand" of the dialog data of a line L9 and "a presumed related demand" While the above-mentioned buffer area memorizes as a demand a user is presumed to be, the contents (hungry) described by the item of the "presumed state" of the dialog data of a line L9 are memorized by the above-mentioned buffer area as a state where a user is presumed.

[0115] for this reason -- for example, if the user uttered the keyword "the place where somewhere is good" and has moreover got on by the family companion in that case, after the agent utterance according to the dialog data of the above-mentioned line L9 is performed Line L14 illustrated to drawing 6 by the following processing of S220-S280 Dialog data (Namely, an "ordinary road" is described by the item of "environment" and a "family companion" is described by the item of a "in-the-car situation".) A "meal" is described by the item of a "demand" and "****" is described by the item of a "state." The dialog data with which "the place where somewhere is good" was described are chosen as the item of "user utterance", and the contents described by the item of "activity" of the dialog data (L14) are set up as activity of a device M3. Consequently, from the Internet etc. to a present location, a nearby family restaurant is searched by the communication device 17, and the agent utterance "how it is at OO restaurant" is outputted from a loudspeaker 7 by it.

[0116] While people have ridden on in the car, when the temperature of the vehicle interior of a room is 30 degrees C or more and the demand of a user presumed by processing of S210 moreover is not "air-conditioner operation needlessness", for example, moreover, by processing of S220-S280 Line L20 illustrated to drawing 7 Dialog data are chosen and the contents described by the item of "activity" of the dialog data (L20) are set up as activity of a device M3. Consequently, loudspeaker 7 shell "Is it hot? Is air-condition r setting temperature lowered? Agent utterance of the question " is outputted.

[0117] And it is the above-mentioned line L20 in this way. When dialog data are chosen By the following processing of S210, it is a line L20. While the contents (air-conditioner setting

temperature is lowered) described by the item of "a presumed demand" of dialog data are memorized by the above-mentioned buffer area as a d mand a us r is presumed to be Lin L20 The contents (a hot throat is a dry) described by the item of the "presum d state" of dialog data are memorized by the above-mentioned buffer area as a state where a user is presumed.
[0118] For this reason, the above-mentioned line L20 That a user is in ", and ", and well ["well"] or the keyword of "lowering" is uttered, or it is a no response after the agent utterance according to dialog data is performed by processing of S220-S280 Line L22 illustrated to drawing 8 Dialog data are chosen and the contents described by the item of "activity" of the dialog data (L22) are set up as activity of a device M3. Consequently, loudspeaker 7 shell "I understand. Air-conditioner setting temperature is lowered. While the agent utterance " is outputted, it will operate so that air-conditioner equipment 13 may lower the temperature of the vehicle interior of a room.
[0119] On the other hand, the above-mentioned line L20 If a user utters "no" and the keyword of "not continuing ["disagreeable" or / this] not lowering" after the agent utterance according to dialog data is performed, ["lowering"] Line L23 illustrated to drawing 8 by processing of S220-S280 Dialog data are chosen and the contents described by the item of "activity" of the dialog data (L23) are set up as activity of a device M3. Consequently, while agent utterance of "carrying out with this" from a loudspeaker 7 is outputted, it will operate so that air-conditioner equipment 13 may maintain the temperature of the vehicle interior of a room.
[0120] Moreover, line L21 which will be illustrated to drawing 7 by processing of S220-S280 if a user utters the keyword "******" and "**********" when the temperature of the vehicle interior of a room is 20 degrees C or more Dialog data are chosen and the contents described by the item of "activity" of the dialog data (L21) are set up as activity of a device M3. consequently, the case where the dialog data of a line L20 mentioned above are chosen -- the same -- "from a loudspeaker 7 -- hot -- coming out -- a shank Is air-conditioner setting temperature lowered? Agent utterance of the question " is outputted.
[0121] And it is the above-mentioned line L21 in this way. When dialog data are chosen the following processing of S210 -- line L21 The contents (air-conditioner setting temperature is lowered -- I want to drink some -- I want to rest) described by both the items of "a presumed demand" of dialog data and "a presumed related demand" While the above-mentioned buffer area memorizes as a demand a user is presumed to be, it is a line L21. The contents (a hot throat is a dry) described by the item of the "presumed state" of dialog data are memorized by the above-mentioned buffer area as a state where a user is presumed.
[0122] For this reason, the above-mentioned line L21 If a user is in "and utters "and the keyword of "well" after the agent utterance according to dialog data is performed Line L22 mentioned above by processing of S220-S280 Line L23 mentioned above by processing of S220-S280 when dialog data were chosen and the user uttered conversely "no" and the keyword of being "disagreeable" Dialog data will be chosen.
[0123] That is, in the control unit 1 of this operation form, a demand of a user will be presumed by processing of S210 based on at least one of the actual utterance keyword from a user, a user's real situation, and the activity that actually operated the device M3. And the dialog data which have the demand presumed by processing of S210 as contents of description of the item of a "demand" are chosen by processing of S220-S280, and device operation is performed by it based on the activity described by the item of "activity" of the selected dialog data. In addition, it depends on the description state [whether based on which contents, a demand of a user is presumed by processing of S210 among the actual utterance keyword from a user, a user's real situation, and the activity of a device M3] of the dialog data used for operating a device M3 by last processing of S280.
[0124] Therefore, according to the control unit 1 of this operation form, devic operation (in the case of the above-mentioned example, information offer operation and air-conditioner equipment 13 operate) based more on the requ st of a us r is realizable. When running the ordinary road by the family companion in the time zone from 9:00 to 21:00 and a us r, for example, utt rs keywords, such as "shopping" and "shopping", next, by processing of S220-S280 Lin L15 illustrated to drawing 6 Dialog data are chosen and the contents d scribed by the it m of

"activity" of the dialog data (L15) are set up as activity of a device M3. Consequ ntly, the nearby shopping centers j and k are searched by the CD-ROM drive or communication d vice 17 of navigation equipment 9 from a their pr sent location, and agent utterance of "<j> and <k> being in near if it is shopping" from a loudspeaker 7 is outputted.

[0125] And it is the above-mentioned line L15 in this way. When dialog data are chosen By the following processing of S210, it is a line L15. While the contents (shopping, parking lot) described by both the items of "a presumed demand" of dialog data and "a presumed related demand" are memorized by the above-mentioned buffer area as a demand a user is presumed to be Line L15 The contents (preparation of movement) described by the item of the "presumed state" of dialog data are memorized by the above-mentioned buffer area as a state where a user is presumed.

[0126] for this reason, the keyword [user] "a usual place" after the agent utterance according to the dialog data of the above-mentioned line L15 was performed -- speaking -- moreover -- the item (P-10: -- for the purpose of shopping) of the user's user profile Line L16 which will be illustrated to drawing 6 by the following processing of S220-S280 if the contents described at the place which goes well are "A department stores" Dialog data are chosen.

[0127] Namely, "9:00 to 21:00" are described by the item of "a time zone or time." An "ordinary road" is described by the item of "environment" and a "family companion" is described by the item of a "in-the-car situation." "Shopping" is described by the item of a "demand" and "preparation of movement" is described by the item of a "state." The dialog data (L16) with which "it goes to A department store well" was described by the item of "personal information", and "the usual place" was described by the item of "user utterance" are chosen. The contents described by the item of "activity" of the dialog data (L16) are set up as activity of a device M3. The target product of the bargain performed at A department store today is searched by the communication device 17 from the Internet etc. Consequently, is it "A department store from a loudspeaker 7? The bargain of OO (for example, electrical machinery supply) is done today. The agent utterance " is outputted. in addition -- the above -- a line -- L -- 16 -- a dialog -- data -- setting -- "-- an individual -- information -- " -- "-- activity -- " -- each -- an item -- it can set -- [--] -- inside -- **** -- S -- 130 -- processing -- present -- a user -- being peculiar -- " -- A -- a department store -- " -- describing -- having -- **** .

[0128] If the contents with which a user utters the two keywords "C mountain" and "skiing" at the season of winter, and is moreover described to be by the item (P-8 : hobby) of the user's user profile on the other hand are "skiing" Line L17 illustrated to drawing 6 by processing of S220-S280 Dialog data are chosen and the contents described by the item of "activity" of the dialog data (L17) are set up as activity of a device M3. Consequently, agent utterance of "starting the root guide to C mountain skiing area" from a loudspeaker 7 is outputted, and path guidance operation to C mountain skiing area from the present location by navigation equipment 9 is started.

[0129] Moreover, while the contents with which a user utters "golf" and two keywords of "being usual", and is moreover described to be by the item (P-8 : hobby) of the user's user profile, for example are "golf" if the contents described by the item (P-9: -- the place which goes by the purpose of a hobby well) of this user profile are "D golf courses" Line L18 illustrated to drawing 6 by processing of S220-S280 Dialog data are chosen and the contents described by the item of "activity" of the dialog data (L18) are set up as activity of a device M3. Consequently, is it "D golf course from a loudspeaker 7? Is reservation status investigated? The agent utterance " is outputted. in addition, the above-mentioned line L18 a dialog -- data -- setting -- "-- an individual -- information -- " -- "-- activity -- " -- each -- an item -- it can set -- [--] -- inside -- **** -- S -- 130 -- processing -- present -- a user -- being peculiar -- " -- D -- a golf course -- " -- describing -- having -- **** .

[0130] Thus, in the control unit 1 of this operation form, the user profile which is information peculiar to a us r is set to one of the parameters at the time of choosing dialog data, and the activity of the device M3 according to the user's user profile is set up. Therefore, device operation adapted to the request peculiar to a user is realizabl .

[0131] And while a two or more man-minutes user profile is memorized by the user profile

storage section 37, the present user's user profile is specifi d and it is mad to change automatically the contents (the cont nts of description of th item of "personal information" and "activity") of a dialog database by processing of S110-S130 according to the specified user profile. And the dialog data which suit the user profile which carried out [above-mentioned] specification are chosen, and it is mad to set up the activity of a device M3 according to the contents described by the item of "activity" of the dialog data.

[0132] Therefore, even if which man of two or more persons the user profile was remembered to be by the user profile storage section 37 uses the control unit 1 concerned, he can change the activity of a device M3 for every man of the, and can realize device operation further based on the request peculiar to the user. Next, line L19 which will be illustrated to drawing 7 by processing of S220-S280 if people have ridden on in the car, the temperature of the vehicle interior of a room moreover rises and it becomes 40 degrees C or more Dialog data are chosen and the contents described by the item of "activity" of the dialog data (L19) are set up as activity of a device M3. Consequently, the degree of "room air temperature is over 40 degrees C from the loudspeaker 7. Air-conditioner setting temperature is lowered. While the agent utterance " is outputted, it will operate so that air-conditioner equipment 13 may lower the temperature of the vehicle interior of a room.

[0133] That is, in the control unit 1 of this operation form, dialog data are chosen only from the real situation of the user who detected, and the activity of a device M3 is set up. Therefore, when the situation that the user is placed turns into a specific situation, irrespective of other factors, such as a user's utterance, a device M3 can be operated in predetermined activity, and it is advantageous.

[0134] As explained in full detail above, according to the control unit 1 of this operation form, according to a user's situation and a demand, operation of devices, such as the contents of utterance and air-conditioner equipment 13, can be made the optimal, and, moreover, a user can be exactly provided with useful information. Moreover, the dialog which has familiarity with a user can be performed and a sense of closeness can also be given to a user.

[0135] In addition, with this operation form, processing of S180 and S190 is equivalent to the input means M1, processing of S140, S150, and S200 is equivalent to the situation detection means M5, processing of S220-S270 is equivalent to the setting means M9, and processing of S280 is equivalent to the appliance control means M11. And processing of S210 is equivalent to the demand presumption means M13, processing of S110 and S120 is equivalent to the discernment means M19, and processing of S130 is equivalent to the change means M17.

[0136] Moreover, with this operation form, the dialog data-storage section 35 is equivalent to the data-storage means M7 for an activity setup, and the user profile storage section 37 is equivalent to the individual information-storage means M15. And it is lines L9-L11, L15, and L21 among the dialog data illustrated to drawing 4 - drawing 8 . Dialog data It is equivalent to the data D1 for an activity setup, and is line L12 -L14, L20, L22, and L23. Dialog data It is equivalent to the 2nd data D2 for an activity setup, and is line L16 -L18. Dialog data are equivalent to the 3rd data D3 for an activity setup, and it is a line L19. Dialog data are equivalent to the 4th data D4 for an activity setup.

[0137] Next, other examples are explained. First, in the control unit 1 of this operation form, the real situation of the weather is grasped with the instruction from VICS information and the user by the dialog, or the signal from a sensor (S200). In addition, what is necessary is to perform agent utterance of the inquiry "whether it has cleared up now", and just to get replies, such as "that is right" and "disagreeableness and raining", from a user, in receiving instruction from a user.

[0138] Therefore, when the weather is fine, for example, the agent utterance "whether it is WX best to golf today" can be performed, and the dialog which has familiarity to a user can be carried out. moreover — the case where the agent utterance "whether the now of the autumnal leaves of Arashiyama is best time to see" is performed, or a time zone is daytime when a season is autumn since time, the present four seasons, and a present time zone are grasped in the control unit 1 of this operation form based on th data of the clock built in self (S140) for example, — "— is it the time of lunch boiled rice, soon? The n xt service area is 10km beyond.

Th agent utt rance " can be performed and the dialog which has familiarity to a user can be carried out.
[0139] on the other hand — a control unit — one — grasping — in the car — a situation — inside — entrainment — a state — it is — which — a seat — what — people — sitting down — — **** — or — ** — saying — being detailed — the contents — the following — [—] — inside — like — it can d scribe .
[SEAT_ID ,PSTYPE,PATYPE,PTYPE ,PROFILE_ID]
In addition, SEAT_ID It is data showing the classification of a seat (sheet), and SEAT_ID =0 shows a driver's seat, SEAT_ID =1 shows a passenger seat, SEAT_ID =2 show the backseat right, SEAT_ID =3 show the center of a backseat, and SEAT_ID =4 show the backseat left.
[0140] Moreover, PSTYPE is data showing crew's sex, PSTYPE=0 shows except human beings, such as a load and an animal, PSTYPE=1 shows a male, and PSTYPE=2 show a woman. Furthermore, PATYPE is data showing the classification of crew's age, PATYPE=0 shows a suckling, PATYPE=1 shows a small child, PATYPE=2 show a schoolchild, PATYPE=3 show a junior high school student, PATYPE=4 show a high school student, PATYPE=5 show a young man, PATYPE=6 show the man in the street, and PATYPE=7 show an old man.
[0141] And PTYPE Are data showing crew's type and PTYPE =0 shows an operator (driver). PTYPE =1 shows an operator's spouse and PTYPE =2 show an operator's child. PTYPE =3 show an operator's parents, PTYPE =4 show other families of an operator, PTYPE =5 show intimate persons other than a family, PTYPE =6 show an operator's acquaintance, and PTYPE =7 show other men.
[0142] And PROFILE_ID is data showing crew's name or name further. Therefore, for example, in [SEAT_ID, PSTYPE, PATYPE, PTYPE, and PROFILE_ID] = [2, 1, 2, 2, and OO Taro], it means that OO Taro who is a boy schoolchild and is an operator's child is sitting on the backseat right.
[0143] And when a control unit 1 grasps such a situation, agent utterance like for example, following (1) - (3) and operation corresponding to it can be performed.
(1) The time of vehicles stopping from a run state, "it stopped. When you come out outside Taro and a vehicle, please check back and open a door. Agent utterance of the warning " is performed.
[0144] (2) The time of vehicles departing from a stop state, "depart. The backseat right covers a child protector. While performing the agent utterance ", the child protector of a rear right-hand side door is made to be covered over other control units.
(3) The time of a user uttering the two keywords "Taro" and a "TV phone", "introduce the camera of a TV phone to Taro. Whom is the partner who talks? After performing agent utterance of the inquiry ", other control units are made to turn and adjust the position posture and focus of a camera of a TV phone to Taro.
[0145] moreover, for example [SEAT_ID, PSTYPE, PATYPE, PTYPE, and PROFILE_ID] = [2, 2, 6, 1, and OO Hanako] [SEAT_ID, PSTYPE, PATYPE, PTYPE, and PROFILE_ID] =[2, 2, 0, and 2, O Mean holding OO pod the Hanako of whose is moreover a female suckling in her child by OO Hanako who is an operator's wife sitting on the backseat right in O pod or].
[0146] And when a control unit 1 grasps such a situation, according to the operation situation of vehicles, it is a sharp curve rightward from "300-meter beyond. Please hold Hanako, a pod, or ****** firmly. Agent utterance of the warning " can be performed.
[0147] On the other hand, the 12-bit data (it is hereafter described as AUDIO_ENV) explained below can describe the contents of the audio environment of the in-the-car situations which a control unit 1 grasps again. Namely, AUDIO_ENV When a least significant bit is made into the 0th bit, For example, the 0th the ON/the bit of the OFF of a cassette are shown, and the 1st the ON/the bit of the OFF of a CD player are shown. ON/OFF of MD player are shown, and a triplet eye shows the 2nd the ON/the bit of the OFF of DVD. It is shown whether the 4th bit of the FM broadcasting of radio is received, and it is shown whether the 5th bit of the AM broadcast of radio is received. The 7th the ON/th bit of the OFF of tel vision are shown, th 8th th ON/the bit of the OFF of video are shown, the 9th the ON/th bit of the OFF of a telephone are shown [it is shown wheth r the 6th bit of the broadcast of a road traffic center is rec ived,], and the 10th bit and the 11th bit are bits of un-using it or a r s rve.

[0148] Therefore, for example, in AUDIO_ENV = [1000 0001 0100], it means that a cass tt , television, and the telephone are turned on [them]. in addition — this xample — [] — the bit by the side of the inner leftmost is the 0th bit And when a control unit 1 grasps such a situation, the following agent utterance and operation corresponding to it can be performed, for example.
[0149] First, the time of a cassette, television, and the telephone being turned on [them] as mentioned above, "he is on the telephone. Please lower the volume of a cassette and television. The agent utterance " is performed. Furthermore, when it detected that vehicles went into the tunnel of a highway, it went into "tunnel. I tell broadcast of a road traffic center. After performing the agent utterance ", the volume of other audios (they are a cassette and television in this case) is lowered. In addition, this becomes AUDIO_ENV = [1000 0011 0100].
[0150] And after performing the agent utterance of "Making a headlight turn on", a headlight is made to turn on, when it can come, simultaneously the headlight of vehicles is not turned on. As mentioned above, this invention cannot be overemphasized by that it is not limited to the above-mentioned operation form, and various forms can be taken although 1 operation form of this invention was explained.
[0151] For example, although the control unit 1 of the above-mentioned operation form was carried in vehicles, it can apply this invention indoors similarly to the equipment which controls various built-in devices. Moreover, although the control unit 1 of the above-mentioned operation form inputted a user's utterance keyword, you may make it input the information by a user's key stroke as information in which the intention of a user was reflected.

[Translation done.]

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, with the above-mentioned conventional equipment, the activity (namely, the contents of reference what to search) of the device for information retrieval, the activity (namely, the contents of utterance with voice) of the device for voice outputs, etc. are set to one to one voice command. Therefore, in order to obtain device operation (the contents of reference, the contents of utterance, etc.) desired truly, the user did not have to be able to utter more voice commands and was not able to get desired device operation in many cases.

[0006] For example, suppose that it programmed temporarily in equipment conventionally so that control action of searching the restaurant near a its present location to the utterance keyword of users, such as "a restaurant and reference", and guiding this reference result with voice might be performed. However, when vehicles are running the highway in the case of this example, even if a user wants to come to have a meal and it speaks with "a restaurant and reference", the restaurant which can go only from an ordinary road will be shown and it will become meaningless information offer.

[0007] In addition, such a problem is the same also about the case where a user inputs his intention not only when inputting his intention by utterance, but by the key stroke input etc. this invention is made in view of such a problem, is the fewer input from a user and aims at offering the control unit which can realize device operation adapted to the request of the user.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram which illustrates the composition of the control unit of this invention.
[Drawing 2] It is a block diagram showing the composition of the control unit of an operation gestalt.
[Drawing 3] It is a flow chart showing the processing performed with the control unit of an operation gestalt.
[Drawing 4] It is the 1 of the drawings explaining an example of a dialog database.
[Drawing 5] It is the 2 of the drawings explaining an example of a dialog database.
[Drawing 6] It is the 3 of the drawings explaining an example of a dialog database.
[Drawing 7] It is the 4 of the drawings explaining an example of a dialog database.
[Drawing 8] It is the 5 of the drawings explaining an example of a dialog database.
[Description of Notations]
1 -- Control unit 3 -- Input unit 5 -- Microphone 7 -- Loudspeaker
9 -- Navigation equipment 11 -- Display 13 -- Air-conditioner equipment
15 -- Audio equipment 17 -- Communication device 19 -- Various sensors
21 -- System control section 23 -- Interface (I/F)
25 -- Voice input section 27 -- Speech synthesis section
29 -- Appliance control interface (appliance control I/F)
31 -- Internet address database 33 -- Reference control section
35 -- Dialog data-storage section L1-L23 -- Dialog data
37 -- User profile storage section
M1 -- Input means M3 -- Device M5 -- Situation detection means
M7 -- Data-storage means for an activity setup D1 -- Data for an activity setup
D2 -- 2nd data for an activity setup D3 -- 3rd data for an activity setup
D4 -- 4th data for an activity setup M9 -- Setting means
M11 -- Appliance control means M13 -- Demand presumption means
M15 -- Individual information-storage means M17 -- Change means M19 -- Discernment means

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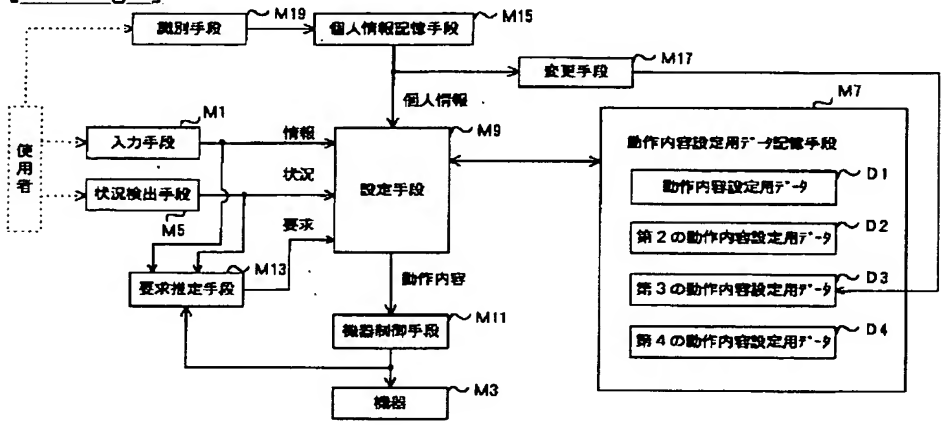
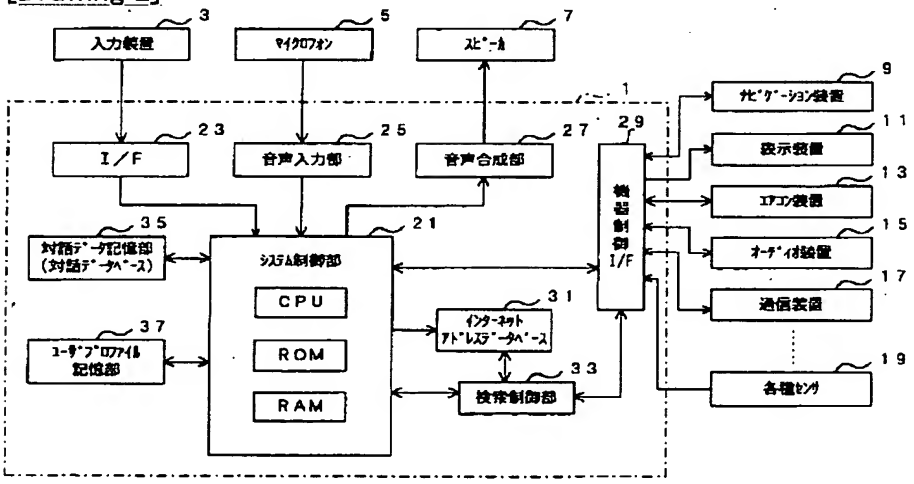
DRAWINGS

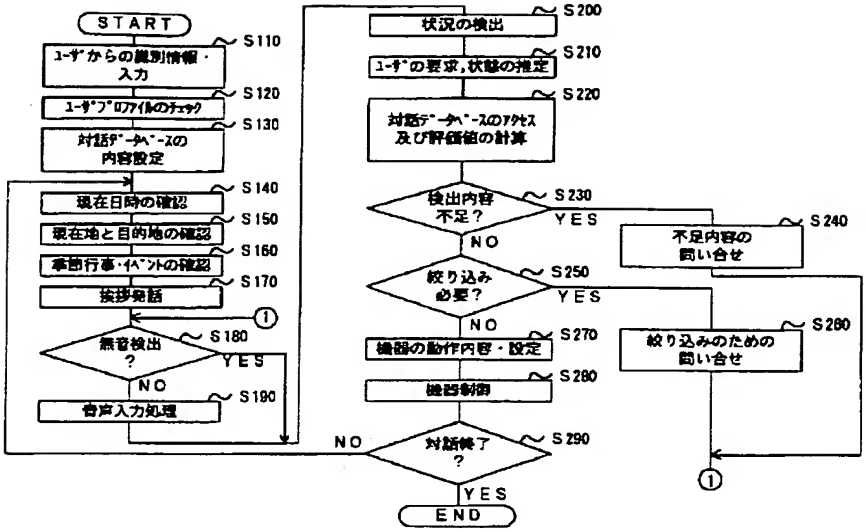
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Drawing 4]

	分類	季節	時間帯・日時	目的地	現在地	環境	車外状況	車内状況	要求	状態	個人情報
L1	挨拶		04:00～11:00								
L2	挨拶		11:00～18:00								
L3	挨拶		18:00～04:00								
L4	挨拶	夏									
L5	挨拶	冬									
L6	挨拶						晴れ				
L7	労い		深夜								
L8	家族										子供有り

	ユーザ発話（認識語彙）	動作内容：「エージェント発話（標準形）」	推定要求	推定状態	推定関連要求
L1		発話：「おはようございます。」			
L2		発話：「こんにちわ。」			
L3		発話：「こんばんわ。」			
L4		発話：「暑いですね。」			
L5		発話：「寒いですね。」			
L6		発話：「今日は本当に良い天気ですね。」			
L7		発話：「夜遅いのに大変ですね。」			
L8		発話：「お子さんはお元気ですか。」			

[Drawing 5]

	分類	季節	時間帯・日時	目的地	現在地	環境	車外状況	車内状況	要求	状態	個人情報
L9	食事					一般道路					
L10	食事					高速道路					
L11	食事		<1998/5/20/11:00>		<刈谷>	一般道路					
L12	駐車場			<岡崎の〇>	<刈谷>	一般道路			駐車場，食事		
L13	経路案内			<岡崎>	<刈谷>	一般道路			経路案内		

	ユーザ発話（認識語彙）	動作内容：「エージェント発話（標準形）」	推定要求	推定状態	推定関連要求
L9	{めし｜ご飯｜腹減った｜お腹すいた｜何か食べたい｜レストラン｜・・・}	検索・発話：「お食事ですね。この近くならば<a>，<b>，<c>など<X1>件のお店があります。どこで食べますか。」	食事	空腹	駐車場，休憩，飲み物
L10	{めし｜ご飯｜腹減った｜お腹すいた｜何か食べたい｜レストラン｜・・・}	検索・発話：「<d>パーキングエリアまであと<X2>分，<e>パーキングエリアならばあと<X3>分です。」	食事	空腹	
L11	<<岡崎>>，{めし}，[インド料理]	検索・発話：「<X4>時<X5>分に，<f>が予約できます。」	食事，行楽	空腹の前	駐車場，休憩，飲み物
L12		検索・発話：「駐車場は<g>が空いています。」	経路案内	移動の準備	
L13		検索・発話：「<h>は渋滞していますので<i>で行くことをお勧めします。」			

[Drawing 6]

	分類	季節	時間帯・日時	目的地	現在地	環境	車外状況	車内状況	要求	状態	個人情報
L14	検索					一般道路		家族連れ	食事	空腹	
L15	買物		09:00～21:00			一般道路		家族連れ			
L16	買物		09:00～21:00			一般道路		家族連れ	買物	移動の準備	[Aデパート]によく行く
L17	趣味	冬									スキーが趣味
L18	趣味										ゴルフが趣味[Dゴルフ場]によく行く

	ユーザ発話（認識語彙）	動作内容：「エージェント発話（標準形）」	推定要求	推定状態	推定関連要求
L14	{どこかいいところ}	検索・発話：「<○○レストラン>でどうですか。」			
L15	{買物｜ショッピング｜デパート}	検索・発話：「お買物でしたら，<j>と<k>が近くにあります。」	買物	移動の準備	駐車場
L16	{いつものところ｜よくいくところ}	検索・発話：「[Aデパート]ですね。今日は○○のバーゲンをやってます。」			
L17	<<C山>>，{スキー}	案内制御・発話：「<C山スキー場>へのルートガイドを開始します。」	スキー	快調	
L18	{ゴルフ}，{いつもの}	発話：「[Dゴルフ場]ですね。予約状況を調べますか。」	ゴルフ場予約	快調	天気予報，食事，ドライブ

[Drawing 7]

	分類	季節	時間帯・日時	目的地	現在地	環境	車外状況	車内状況	要求	状態	個人情報
L19	機器操作							有人乗車で、車内温度が40℃以上			
L20	機器操作							有人乗車で、車内温度が30℃以上	{エアコン操作以外}		
L21	機器操作							有人乗車で、車内温度が20℃以上			

	ユーザ発話（認識語彙）	動作内容：「エージェント発話（標準形）」	推定要求	推定状態	推定関連要求
L19		エアコン制御・発話：「車内温度が40℃を越えています。エアコン設定温度を下げます。」	エアコン設定温度下げ	暑い乾いた	
L20		発話：「暑いですね。エアコン設定温度を下げますか。」	エアコン設定温度下げ	暑い乾いた	
L21	{あつい|あついなあ}	発話：「暑いですね。エアコン設定温度を下げますか。」	エアコン設定温度下げ	暑い乾いた	何か飲みたい，休みたい

[Drawing 8]

	分類	季節	時間帯・日時	目的地	現在地	環境	車外状況	車内状況	要求	状態	個人情報
L22	機器操作								エアコン設定温度下げ	暑い乾いた	
L23	機器操作								エアコン設定温度下げ	暑い乾いた	

	ユーザ発話（認識語彙）	動作内容：「エージェント発話（標準形）」	推定要求	推定状態	推定関連要求
L22	{はい|うん|下げる|『無応答』}	エアコン制御・発話：「わかりました。エアコン設定温度を下げます。」	エアコン設定温度下げ	暑い乾いた	何か飲みたい，休みたい
L23	{いいえ|いや|下げない|このまま}	エアコン制御・発話：「このままにしておきます。」	エアコン操作不要	平常	

[Translation done.]

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審査請求　未請求　請求項の数７　ＯＬ　（全 21 頁）　最終頁に続く

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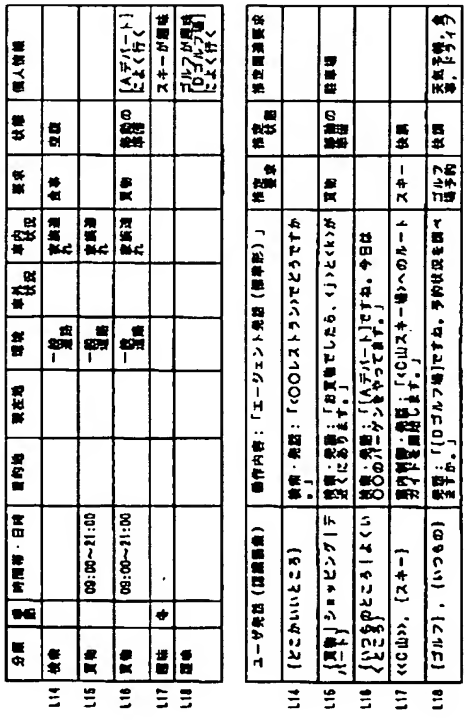
(54)【発明の名称】　制御装置

(57)【要約】

【課題】　使用者の要望に即した機器動作を実現可能な制御装置を提供する。

【解決手段】　使用者と音声にて対話しつつ車両に搭載された様々な機器を制御する制御装置は、使用者が置かれている状況（車両周囲の環境，車外状況，車内状況など）と、使用者の要求と、使用者の個人情報と、使用者の発話キーワード（ユーザ発話）と、機器の動作内容との、各項目について適宜内容を記述した複数の対話データL14, L15, …からなる対話データベースを備えている。そして、検出した使用者の実状況と、推定した使用者の要求と、現在の使用者の個人情報と、マイクを介し入力した使用者の発話キーワードとにマッチする対話データを、上記対話データベースから検索し、その対話データの「動作内容」の項目に記述されている内容に従い、スピーカからの発話を行うと共に情報検索用機器などの他の機器を動作させる。このため、使用者の要望に即した機器動作が可能となる。



【特許請求の範囲】
【請求項１】　使用者から該使用者の意図が反映された情報を入力する入力手段を備え、該入力手段により入力された情報に応じて、所定の機器を動作させる制御装置であって、
使用者が置かれている状況を検出する状況検出手段と、
前記入力手段により入力される情報と、前記状況検出手段により検出される状況とから、前記機器の動作内容を設定するための動作内容設定用データを記憶した動作内容設定用データ記憶手段と、
前記入力手段により入力された情報と、前記状況検出手段により検出された状況とに対応する動作内容を、前記動作内容設定用データから検索し、該当する動作内容があれば、その動作内容を、前記機器の動作内容として設定する設定手段と、
該設定手段により設定された動作内容に従い、前記機器を動作させる機器制御手段と、
を備えたことを特徴とする制御装置。
【請求項２】　請求項１に記載の制御装置において、
前記入力手段により入力された情報と、前記状況検出手段により検出された状況と、前記機器制御手段による前記機器の動作内容との、少なくとも１つに基づき、使用者の要求を推定する要求推定手段を備えると共に、
前記動作内容設定用データ記憶手段には、前記入力手段により入力される情報と、前記状況検出手段により検出される状況と、前記要求推定手段により推定される要求とのうちで、前記推定される要求を含む少なくとも２つ以上の項目から、前記機器の動作内容を設定するための第２の動作内容設定用データが記憶されており、
前記設定手段は、前記入力手段により入力された情報と、前記状況検出手段により検出された状況と、前記要求推定手段により推定された要求とのうちで、前記推定された要求を含む少なくとも２つ以上の項目に対応する動作内容を、前記第２の動作内容設定用データから検索し、該当する動作内容があれば、その動作内容を、前記機器の動作内容として設定すること、
を特徴とする制御装置。
【請求項３】　請求項２に記載の制御装置において、
使用者の個人情報を記憶する個人情報記憶手段を備えると共に、
前記動作内容設定用データ記憶手段には、前記入力手段により入力される情報と、前記状況検出手段により検出される状況と、前記要求推定手段により推定される要求と、前記個人情報記憶手段に記憶される個人情報とのうちで、前記個人情報を含む少なくとも２つ以上の項目から、前記機器の動作内容を設定するための第３の動作内容設定用データが記憶されており、
前記設定手段は、前記入力手段により入力された情報と、前記状況検出手段により検出された状況と、前記要求推定手段により推定された要求と、前記個人情報記憶手段に記憶された個人情報とのうちで、前記個人情報記憶手段に記憶された個人情報を含む少なくとも２つ以上の項目に対応する動作内容を、前記第３の動作内容設定用データから検索し、該当する動作内容があれば、その動作内容を、前記機器の動作内容として設定すること、
を特徴とする制御装置。
【請求項４】　請求項３に記載の制御装置において、
前記第３の動作内容設定用データを、前記個人情報記憶手段に記憶された個人情報に応じて変更する変更手段を備えていること、
を特徴とする制御装置。
【請求項５】　請求項４に記載の制御装置において、
前記個人情報記憶手段には、複数人分の個人情報が記憶されると共に、
前記個人情報記憶手段に記憶されている複数人分の個人情報の中から、現在の使用者の個人情報を特定する識別手段を備え、
更に、前記変更手段は、前記第３の動作内容設定用データを、前記識別手段により特定された個人情報に応じて変更し、
前記設定手段は、前記第３の動作内容設定用データから動作内容を検索する際に、前記識別手段により特定された個人情報を用いること、
を特徴とする制御装置。
【請求項６】　請求項１ないし請求項５に記載の制御装置において、
前記動作内容設定用データ記憶手段には、前記状況検出手段により検出される状況のみから、前記機器の動作内容を設定するための第４の動作内容設定用データが記憶されており、
前記設定手段は、前記状況検出手段により検出された状況に対応する動作内容を、前記第４の動作内容設定用データから検索し、該当する動作内容があれば、その動作内容を、前記機器の動作内容として設定すること、
を特徴とする制御装置。
【請求項７】　請求項１ないし請求項６に記載の制御装置において、
前記入力手段は、前記情報として、使用者が発話したキーワードを入力し、
前記機器は、音声を出力するための音声出力用機器と、他の機器とからなること、
を特徴とする制御装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、使用者の発話やキー操作入力など、使用者の意図が反映された入力情報に応じて、情報検索用機器や音声出力用機器などの所定の機器を動作させる制御装置に関する。
【０００２】
【従来の技術】近年、例えば自動車用のナビゲーション

装置として、使用者が、音声コマンドとして予め定められた言葉を発話することにより、その音声コマンドに対応した動作を行うものが実用化されている。

【０００３】例えば、この種の装置では、使用者が「現在地」といった音声コマンドを発話すると、当該装置の中枢を成すマイクロコンピュータからなる制御部が、ＣＤ－ＲＯＭドライブなどの情報検索用機器に現在地付近の地名や施設などを検索させると共に、その検索結果に基づき、スピーカなどからなる音声出力用機器から「○○付近です」といった案内用の音声を出力させるようにしている。

【０００４】また例えば、使用者が「地図検索」といった音声コマンドを発話した後に、地名を発話すると、当該装置の制御部が、情報検索用機器に上記発話された地名の周辺地図を検索させると共に、その検索結果に基づき、ＣＲＴなどからなる表示用機器に上記発話された地名の周辺地図を表示させるようにしている。

【０００５】

【発明が解決しようとする課題】しかしながら、上記従来の装置では、１つの音声コマンドに対して、情報検索用機器の動作内容（即ち、何を検索するのかという検索内容）や音声出力用機器の動作内容（即ち、音声による発話内容）などが１つに定められている。よって、使用者は、本当に望んでいる機器動作（検索内容や発話内容など）を得るために、より多くの音声コマンドを発話しなければならなかったり、また、所望の機器動作を得ることができない場合が多かった。

【０００６】例えば、従来装置において、仮に「レストラン，検索」といった使用者の発話キーワードに対し、現在地付近のレストランを検索して該検索結果を音声により案内する、といった制御動作を行うようにプログラミングしたとする。ところが、この例の場合、車両が高速道路を走行している際に、使用者が食事をしたくなって「レストラン，検索」と発話しても、一般道路からでしか行くことのできないレストランが案内されて、意味の無い情報提供となってしまう。

【０００７】尚、こうした問題は、使用者が、自分の意図を発話によって入力する場合に限らず、キー操作入力などによって自分の意図を入力する場合についても同様である。本発明は、こうした問題に鑑みなされたものであり、使用者からのより少ない入力情報で、その使用者の要望に即した機器動作を実現可能な制御装置を提供することを目的としている。

【０００８】

【課題を解決するための手段、及び発明の効果】上記目的を達成するためになされた請求項１に記載の本発明の制御装置は、図１に例示するように、使用者から該使用者の意図が反映された情報を入力する入力手段Ｍ１を備えており、その入力手段Ｍ１によって入力された情報（以下、入力情報ともいう）に応じて、所定の機器Ｍ３を動作させるものである。

【０００９】尚、機器Ｍ３としては、所定のデータベースから情報を検索する情報検索用機器，音声を出力する音声出力用機器，無線或いは有線による通信用機器，空調機器，テレビやテープレコーダといったオーディオ機器，ＣＲＴや液晶といった表示用機器，及び照明機器など、様々なものが考えられる。そして、当該制御装置が動作させる機器Ｍ３は、１つであっても良いし、複数個及び複数種類であっても良い。

【００１０】また、入力手段Ｍ１が入力する情報としては、使用者が発話した音声のキーワードや、使用者のキー操作或いはスイッチ操作による情報など、様々なものが考えられる。また更に、入力手段Ｍ１が入力する情報としては、無入力（つまり、使用者が意図的に情報を入力しないこと）を含むようにしても良い。

【００１１】ここで特に、本発明の制御装置は、使用者が置かれている状況を検出する状況検出手段Ｍ５と、動作内容設定用データ記憶手段Ｍ７とを備えており、動作内容設定用データ記憶手段Ｍ７には、入力手段Ｍ１により入力される情報と、状況検出手段Ｍ５により検出される状況とから、機器Ｍ３の動作内容を設定するための動作内容設定用データＤ１が記憶されている。

【００１２】そして、設定手段Ｍ９が、入力手段Ｍ１により入力された情報と、状況検出手段Ｍ５により検出された状況とに対応する動作内容を、前記動作内容設定用データＤ１から検索し、該当する動作内容があれば、その動作内容を、前記機器Ｍ３の動作内容として設定する。すると、機器制御手段Ｍ１１が、前記設定手段Ｍ９により設定された動作内容に従って機器Ｍ３を動作させる。尚、本発明において、機器Ｍ３の動作内容としては、無動作（つまり、機器Ｍ３を動作させないこと）という内容も含む。

【００１３】このような本発明の制御装置によれば、入力手段Ｍ１により入力された使用者からの入力情報だけではなく、使用者が置かれている状況に応じて、機器Ｍ３の動作内容を変えることができる。つまり、使用者からの入力情報が同じであっても、使用者が置かれている状況に応じて、機器Ｍ３の動作内容を最適なものにすることができる。よって、使用者からのより少ない入力情報で、その使用者の要望に即した機器動作を実現することができる。

【００１４】次に、請求項２に記載の制御装置は、図１に例示するように、請求項１に記載の制御装置に対して、要求推定手段Ｍ１３を追加して備えており、この要求推定手段Ｍ１３は、入力手段Ｍ１により入力された情報と、状況検出手段Ｍ５により検出された状況と、機器制御手段Ｍ１１による機器Ｍ３の動作内容との、少なくとも１つに基づいて、使用者の要求を推定する。

【００１５】そして更に、動作内容設定用データ記憶手段Ｍ７には、入力手段Ｍ１により入力される情報と、状

況検出手段Ｍ５により検出される状況と、要求推定手段Ｍ１３により推定される要求とのうちで、要求推定手段Ｍ１３により推定される要求を含む少なくとも２つ以上の項目から、機器Ｍ３の動作内容を設定するための第２の動作内容設定用データＤ２が記憶されている。

【００１６】そして、設定手段Ｍ９は、入力手段Ｍ１により入力された情報と、状況検出手段Ｍ５により検出された状況と、要求推定手段Ｍ１３により推定された要求とのうちで、要求推定手段Ｍ１３により推定された要求を含む少なくとも２つ以上の項目に対応する動作内容を、前記第２の動作内容設定用データＤ２から検索し、該当する動作内容があれば、その動作内容を、機器Ｍ３の動作内容として設定する。

【００１７】つまり、請求項２に記載の制御装置では、使用者からの入力情報と、状況検出手段Ｍ５により検出された状況と、機器制御手段Ｍ１１による機器Ｍ３の動作内容との、少なくとも１つに基づき使用者の要求を推定し、その推定した使用者の要求をパラメータの１つとして、機器Ｍ３の動作内容を設定するようにしている。

【００１８】よって、このような請求項２に記載の制御装置によれば、使用者の要望に、より即した機器動作を実現することができる。尚、動作内容設定用データＤ１と第２の動作内容設定用データＤ２は、設定手段Ｍ９が各データＤ１，Ｄ２から同時に異なる動作内容を捜し出さないように、予め排他的に設定しておけば良い。また、各データＤ１，Ｄ２に検索の優先順位を設けておき、設定手段Ｍ９は、その優先順位に従い、各データＤ１，Ｄ２の１つずつから動作内容を検索して、該当する動作内容があった時点で、その動作内容を機器Ｍ３の動作内容として設定するようにしても良い。

【００１９】次に、請求項３に記載の制御装置は、図１に例示するように、請求項２に記載の制御装置に対して、使用者の個人情報を記憶する個人情報記憶手段Ｍ１５を追加して備えている。そして更に、動作内容設定用データ記憶手段Ｍ７には、入力手段Ｍ１により入力される情報と、状況検出手段Ｍ５により検出される状況と、要求推定手段Ｍ１３により推定される要求と、個人情報記憶手段Ｍ１５に記憶される個人情報とのうちで、個人情報記憶手段Ｍ１５に記憶される個人情報を含む少なくとも２つ以上の項目から、機器Ｍ３の動作内容を設定するための第３の動作内容設定用データＤ３が記憶されている。

【００２０】そして、設定手段Ｍ９は、入力手段Ｍ１により入力された情報と、状況検出手段Ｍ５により検出された状況と、要求推定手段Ｍ１３により推定された要求と、個人情報記憶手段Ｍ１５に記憶された個人情報とのうちで、個人情報記憶手段Ｍ１５に記憶された個人情報を含む少なくとも２つ以上の項目に対応する動作内容を、前記第３の動作内容設定用データＤ３から検索し、該当する動作内容があれば、その動作内容を、機器Ｍ３の動作内容として設定する。

【００２１】このような請求項３に記載の制御装置によれば、当該装置を実際に使用する使用者の個人情報を、個人情報記憶手段Ｍ１５に記憶しておくことにより、その使用者の個人情報がパラメータの１つとなって、機器Ｍ３の動作内容が設定されることとなる。よって、この制御装置によれば、使用者に特有の要望に即した機器動作を実現することができ、有利である。

【００２２】尚、動作内容設定用データＤ１と第２の動作内容設定用データＤ２と第３の動作内容設定用データＤ３は、設定手段Ｍ９が各データＤ１，Ｄ２，Ｄ３から同時に異なる動作内容を捜し出さないように、予め排他的に設定しておけば良い。また、各データＤ１，Ｄ２，Ｄ３に検索の優先順位を設けておき、設定手段Ｍ９は、その優先順位に従い、各データＤ１，Ｄ２，Ｄ３の１つずつから動作内容を検索して、該当する動作内容があった時点で、その動作内容を機器Ｍ３の動作内容として設定するようにしても良い。

【００２３】次に、請求項４に記載の制御装置は、図１に例示するように、請求項３に記載の制御装置に対して、変更手段Ｍ１７を追加して備えている。そして、変更手段Ｍ１７は、前記第３の動作内容設定用データＤ３を、個人情報記憶手段Ｍ１５に記憶された個人情報に応じて変更する。

【００２４】このような請求項４に記載の制御装置によれば、当該装置を実際に使用する使用者毎に、機器Ｍ３の動作内容を変えることができ、使用者に特有の要望に一層即した機器動作を実現することができる。次に、請求項５に記載の制御装置は、図１に例示するように、請求項４に記載の制御装置において、個人情報記憶手段Ｍ１５には、複数人分の個人情報が記憶されるようになっていると共に、その個人情報記憶手段Ｍ１５に記憶されている複数人分の個人情報の中から、現在の使用者の個人情報を特定する識別手段Ｍ１９を備えている。

【００２５】そして、変更手段Ｍ１７は、前記第３の動作内容設定用データＤ３を、識別手段Ｍ１９により特定された個人情報に応じて変更し、設定手段Ｍ９は、前記第３の動作内容設定用データＤ３から動作内容を検索する際に、前記識別手段Ｍ１９により特定された個人情報を用いる。

【００２６】この請求項５に記載の制御装置によれば、個人情報記憶手段Ｍ１５に個人情報が記憶された複数人のうちの何れの人が、当該装置を使用しても、請求項４に記載の制御装置による効果を得ることができる。次に、請求項６に記載の制御装置では、図１に例示するように、請求項１～請求項５に記載の制御装置において、動作内容設定用データ記憶手段Ｍ７には、状況検出手段Ｍ５により検出される状況のみから、機器Ｍ３の動作内容を設定するための第４の動作内容設定用データＤ４が記憶されている。

【００２７】そして、設定手段Ｍ９は、状況検出手段Ｍ５により検出された状況に対応する動作内容を、前記第４の動作内容設定用データＤ４から検索し、該当する動作内容があれば、その動作内容を、機器Ｍ３の動作内容として設定する。つまり、請求項６に記載の制御装置では、状況検出手段Ｍ５により検出された状況のみからも、機器Ｍ３の動作内容が設定されるようにしている。

【００２８】このような請求項６に記載の制御装置によれば、使用者が置かれている状況が特定の状況になった場合に、使用者からの入力情報などの他の要因に拘らず、機器Ｍ３を所定の動作内容にて動作させることができ、有利である。例えば、機器Ｍ３として、音声を出力する音声出力用機器を備える場合には、特定の状況にて、使用者に対し音声による警告などを行うことができる。

【００２９】尚、第４の動作内容設定用データＤ４と他の動作内容設定用データ（Ｄ１，Ｄ２，Ｄ３）は、設定手段Ｍ９が各データから同時に異なる動作内容を捜し出さないように、予め排他的に設定しておけば良い。また、第４の動作内容設定用データＤ４と他の動作内容設定用データ（Ｄ１，Ｄ２，Ｄ３）とに検索の優先順位を設けておくようにしても良い。

【００３０】次に、請求項７に記載の制御装置では、請求項１～請求項６に記載の制御装置において、入力手段Ｍ１が、前記情報（使用者の意図が反映された情報）として、使用者が発話したキーワードを入力する。そして、機器Ｍ３は、音声を出力するための音声出力用機器と、他の機器とからなる。

【００３１】このような請求項７に記載の制御装置によれば、動作内容設定用データ記憶手段Ｍ７に記憶させておく各動作内容設定用データＤ１～Ｄ４の設定内容により、使用者と音声にて対話しながら音声出力用機器以外の他の機器を動作させる、対話型の機器制御装置を容易に構成することができる。特に、前記他の機器を、所定のデータベースから情報を検索する情報検索用機器とすれば、使用者の望む情報を的確に提供することのできる対話型の情報提供装置となる。

【００３２】

【発明の実施の形態】以下、本発明の実施形態について、図面を用いて説明する。まず図２は、実施形態の制御装置１の構成を表すブロック図である。尚、本実施形態の制御装置１は、自動車（車両）に搭載されて、使用者としての車両の乗員（主に、運転者）と音声にて対話しながら、その車両に搭載された様々な機器を制御するものである。

【００３３】図２に示すように、本実施形態の制御装置１は、使用者が各種の指令やデータなどを外部操作によって入力するための入力装置３と、音声を入力するためのマイクロフォン５と、音声を出力するためのスピーカ７と、車両の現在位置（現在地）の検出や経路案内などを行う周知のナビゲーション装置９と、画像を表示するための表示装置１１と、車内の空調を制御するエアコン装置１３と、カセットテープレコーダ，ＣＤ（コンパクトディスク）プレーヤ，ＭＤ（ミニディスク）プレーヤ，ラジオ，及びテレビなどからなるオーディオ装置１５と、周知のＶＩＣＳ（Vehicle Information and Communication System）の放送端末や、インターネットとの接続窓口であるインターネット放送端末との間で無線によりデータ通信を行う通信装置１７と、車速や加減速状態などの車両運転状態，車両内外の温度，及び雨滴の有無などを検出するための各種センサ１９と、車両のドアロック，窓ガラス（パワーウィンドウ），エンジン，及びブレーキ装置などを制御する他の制御装置（図示省略）とに接続されている。

【００３４】尚、ナビゲーション装置９は、車両の現在位置を検出するための周知のＧＰＳ装置や、地図データ，地名データ，施設名データなどの経路案内用データを記憶したＣＤ－ＲＯＭ、そのＣＤ－ＲＯＭからデータを読み出すためのＣＤ－ＲＯＭドライブ、及び、使用者が指令を入力するための操作キーなどを備えている。そして、ナビゲーション装置９は、例えば、使用者から操作キーを介して、目的地と目的地までの経路案内を指示する指令とが入力されると、車両の現在位置と目的地へ至るのに最適な経路とを含む道路地図を、表示装置１１に表示させて経路案内を行う。また、表示装置１１には、ナビゲーション装置９によって経路案内用の道路地図が表示されるだけでなく、情報検索用メニューなどの様々な画像が表示され、更に、オーディオ装置１５がテレビのモードに設定されると、そのオーディオ装置１５に備えられたテレビチューナにより受信されたテレビの受信画像が表示される。

【００３５】そして、制御装置１は、ＣＰＵ，ＲＯＭ，及びＲＡＭなどからなるマイクロコンピュータを中心に構成されたシステム制御部２１と、システム制御部２１に入力装置３からの指令やデータを入力するインタフェース（Ｉ／Ｆ）２３と、マイクロフォン５から入力された音声信号をデジタルデータに変換してシステム制御部２１に入力する音声入力部２５と、システム制御部２１から出力されたテキストデータをアナログの音声信号に変換してスピーカ７に出力し、スピーカ７を鳴動させる音声合成部２７と、上記ナビゲーション装置９，表示装置１１，エアコン装置１３，オーディオ装置１５，通信装置１７，各種センサ１９，及び他の制御装置とシステム制御部２１とをデータ通信可能に接続する機器制御インタフェース（機器制御Ｉ／Ｆ）２９とを備えている。

【００３６】また、制御装置１には、通信装置１７によりインターネットから所望の情報を検索及び取得するために、インターネットのアドレス（インターネットアドレス）を記憶するインターネットアドレスデータベース３１と、検索制御部３３とが備えられている。そして、

システム制御部２１が、検索制御部３３へ検索内容（コンテンツ）を表す検索キーワードを出力すると、検索制御部３３は、機器制御Ｉ／Ｆ２９を介し通信装置１７を動作させて、インターネット放送端末から上記検索キーワードに対応した情報を検索し、その検索結果をシステム制御部２１へ入力させる。また、インターネットアドレスデータベース３１には、検索制御部３３によって過去に用いられたインターネットアドレスが、システム制御部２１からの指令によって記憶され、検索制御部３３は、システム制御部２１から過去に入力した検索キーワードと同じ検索キーワードを受けると、インターネットアドレスデータベース３１内のインターネットアドレスを再利用する。

【００３７】尚、本実施形態では、スピーカ７，ナビゲーション装置９，そのナビゲーション装置９に備えられたＣＤ－ＲＯＭドライブ（図示省略），表示装置１１，エアコン装置１３，オーディオ装置１５，通信装置１７，及び他の制御装置（図示省略）が、機器Ｍ３に相当しており、以下、これらを総称して、機器Ｍ３という。また、これらの機器Ｍ３のうちで、スピーカ７が音声出力用機器に相当し、それ以外が他の機器に相当している。

【００３８】そして更に、制御装置１には、スピーカ７から出力する発話（以下、エージェント発話ともいう）の内容（即ち、スピーカ７の動作内容）とスピーカ７以外の上記他の機器の動作内容とを設定するためのデータを記憶する手段として、対話データベースを記憶する対話データ記憶部３５と、使用者の複数人分の個人情報（以下、ユーザプロファイルともいう）を記憶するユーザプロファイル記憶部３７とを備えている。尚、この対話データ記憶部３５及びユーザプロファイル記憶部３７と、前述したインターネットアドレスデータベース３１は、データの読み出しと書き込みとが可能な不揮発性メモリによって構成されている。

【００３９】ここで、対話データ記憶部３５に記憶される対話データベースと、ユーザプロファイル記憶部３７に記憶されるユーザプロファイルとについて説明する。まず、ユーザプロファイル記憶部３７に記憶される個人情報としてのユーザプロファイルは、例えば以下の（Ｐ－１）～（Ｐ－１１）などの各項目について、使用者に固有の情報が記述されるものである。

【００４０】（Ｐ－１）：その人の分類（一般，社長，若者，性別など）。

（Ｐ－２）：氏名、或いは更に、その人を識別するための氏名以外の他の識別情報（パスワード，識別番号など）。

（Ｐ－３）：生年月日（誕生日）。

【００４１】（Ｐ－４）：出身地。

（Ｐ－５）：住所。

（Ｐ－６）：職業。

（Ｐ－７）：役職。

【００４２】（Ｐ－８）：趣味。

（Ｐ－９）：趣味の目的で、よく行くところ。

（Ｐ－１０）：買物の目的で、よく行くところ。

（Ｐ－１１）：家族構成，家族の氏名，及び家族の生年月日。

【００４３】尚、このユーザプロファイルは、使用者が入力装置３を操作して上記各項目の内容を入力することにより、ユーザプロファイル記憶部３７にシステム制御部２１の書き込み動作によって記憶される。次に、対話データ記憶部３５に記憶される対話データベースは、その一例を図４～図８に示すように、表形式のデータ構造を有している。そして、図４～図８において、横方向の各ラインL1～L23 が、１組の対話データになっており、こうした対話データの複数から対話データベースが構成されている。尚、図４～図８では、各ラインL1～L23 が２段に亘って表されている。

【００４４】即ち、対話データベースを構成する各対話データは、その対話データの分類の項目と、使用者が置かれている状況を表す複数の項目（本実施形態では、季節，時間帯或いは日時，目的地，現在地，車両周囲の環境，車外状況，車内状況）と、使用者の要求の項目と、使用者の状態の項目と、使用者の個人情報の項目と、マイクロフォン５及び音声入力部２５を介して入力される使用者の発話（以下、ユーザ発話ともいう）の項目と、当該制御装置１が機器Ｍ３を動作させる際の動作内容（エージェント発話の内容及びスピーカ７以外の他の機器の動作内容）の項目と、推定される使用者の要求である推定要求の項目と、推定される使用者の状態である推定状態の項目と、推定される使用者の他の要求である推定関連要求の項目との各々について、対応する内容を記述するためのデータ領域を有している。そして、各対話データは、上記各項目のデータ領域に、対応する内容を記述したものである。尚、記述とは、予め確保されたデータ領域に、対応する内容を表すデータがセットされることを意味している。

【００４５】ここで、こうした対話データベースの各項目について、具体的に説明する。

（Ｃ－１）：分類

「分類」の項目には、その対話データが、使用者との対話においてどの様な話題に関するものかを表す内容が予め記述され、特に、後述する「動作内容」の項目に記述されるエージェント発話の分類を表す内容が記述されている。

【００４６】そして、この「分類」の項目に記述される内容としては、例えば、図４～図８に例示するように、挨拶，労い，家族，食事，駐車場，経路案内，検索，買物，趣味，機器操作などがあり、更に図示はされていないが、その他にも、導入，スポーツ，目的地，質問，確認，あいずち，一時停止，終了などがある。

【００４７】（Ｃ－２）：季節
「季節」の項目には、春，夏，秋，冬といった四季の何れかや、初夏や盛夏など、四季を更に細分化した内容が予め記述されている。
（Ｃ－３）：時間帯或いは日時
「時間帯或いは日時」の項目には、朝，昼，夜，早朝，深夜などや、何時から何時まで、といった具体的な時間帯の内容、或いは、何年何月何日何時何分、といった詳細な日時などが記述される。
【００４８】そして、この「時間帯或いは日時」の項目は、予め内容が記述されているものと、システム制御部２１が内容を逐次記述するものとがある。例えば、図４に例示するラインL1～L3，L7の対話データと、図６に例示するラインL15，L16 の対話データとにおいて、「時間帯或いは日時」の項目には、時間帯を表す内容が予め記述されている。また、図５に例示するラインL11 の対話データにおいて、「時間帯或いは日時」の項目における<>内には、システム制御部２１により現在の日時が逐次更新されて記述される。
【００４９】（Ｃ－４）：目的地
「目的地」の項目には、システム制御部２１により、使用者の意図する目的地が記述される。尚、システム制御部２１は、ナビゲーション装置９から使用者によって設定された目的地を読み出したり、それまでの使用者との対話内容によって、「目的地」の項目に記述すべき内容を取得する。
【００５０】そして、この「目的地」の項目は、内容が記述されるものと記述されないものとがある。例えば、図５に例示するラインL12，L13 の対話データにおいて、「目的地」の項目における<>内には、システム制御部２１により、それまでの使用者との対話内容に応じた目的地が記述される。また、図４～図８に例示する上記ラインL12，L13 以外の対話データにおいて、「目的地」の項目には、内容が記述されないようになっている。
【００５１】（Ｃ－５）：現在地
「現在地」の項目には、システム制御部２１により、車両の現在地が記述される。尚、システム制御部２１は、ナビゲーション装置９から車両の現在地を読み出して、「現在地」の項目に記述すべき内容を取得する。
【００５２】そして、この「現在地」の項目は、「目的地」の項目と同様に、内容が記述されるものと記述されないものとがある。例えば、図５に例示するラインL11～L13 の対話データにおいて、「現在地」の項目における<>内には、システム制御部２１により、車両の現在地が記述される。また、図４～図８に例示する上記ラインL11 ～L13 以外の対話データにおいて、「現在地」の項目には、内容が記述されないようになっている。
【００５３】（Ｃ－６）：環境
「環境」の項目には、車両周囲の環境を表す内容が、予め記述されている。具体的には、道路環境を表す内容（高速道路，一般道路，国道，県道など）、道路状態を表す内容（路面凍結，路面が滑り易いなど）、交通環境を表す内容（速度制限，一方通行，進入禁止など）、及び、地理環境を表す内容（海が近い，山の中，街中，駅前など）が、予め記述されている。
【００５４】（Ｃ－７）：車外状況
「車外状況」の項目には、車外の状況を表す内容が、予め記述されている。具体的には、現在地の天候を表す内容（晴れ，曇り，小雨，雨，大雨，雪，雷，台風など）、目的地の天候を表す内容（晴れ，曇り，小雨，雨，大雨，雪，雷，台風など）、交通状況を表す内容（渋滞，やや渋滞，すいている，事故発生など）、及び、車両周辺状況を表す内容（追い越し車両あり，追従車両あり、先行車両ありなど）が、予め記述されている。尚、車両周辺状況を表す内容としては、追い越し車両や追従車両の種別（トラック，乗用車，バイクなど）を付加して記述しておくこともできる。
【００５５】（Ｃ－８）：車内状況
「車内状況」の項目には、車内の状況を表す内容が、予め記述されている。具体的には、運転状態を表す内容（渋滞した道路での走行，快適な走行，振動あり，速度オーバーなど）、乗車状態を表す内容（１人，２人，大勢（３人以上），家族連れ，或いは更に、どの座席にどの様な人が座っているかという詳細な内容など）、車室内温度を表す内容、移動目的を表す内容（家族とのドライブ，友人とのドライブ，恋人とのデートなど）、及び、オーディオ環境を表す内容などが、予め記述されている。
【００５６】（Ｃ－９）：要求
「要求」の項目には、使用者が持つと考えられる要求を表す内容が、予め記述されている。具体的には、食事，飲み物，買物，ドライブ，休憩，遊び，公園，遊園地，テーマパーク，ボーリング，テニス，プール，ジョギング，海水浴，スキー，ゴルフ，ゴルフ場予約，経路案内，駐車場，エアコン設定温度を下げる，エアコン設定温度を上げる，エアコン操作不要など、といった内容が記述されている。
【００５７】（Ｃ－１０）：状態
「状態」の項目には、使用者がなると考えられる精神的状態または肉体的状態を表す内容が、予め記述されている。具体的には、空腹，空腹の前，移動の準備（移動しようとしている状態），快調，平常，暑い，喉が乾いた，元気はつらつ，ドライブを楽しんでいる，食事中，音楽鑑賞中，テレビ鑑賞中，満腹，疲労，帰りたい，遊びたい，早く目的地に着きたい，休憩中，いらいらしている，怒っている，気が沈んでいる（落ち込んでいる）など、といった内容が記述されている。
【００５８】（Ｃ－１１）：個人情報
「個人情報」の項目には、前述したユーザプロファイル

の各項目（Ｐ－１～Ｐ－１１）のうちで、その対話データにおける他の項目（特に「分類」，「要求」，「ユーザ発話」，「動作内容」）の記述内容に関連した項目の内容が記述される。

【００５９】そして、この「個人情報」の項目としては、予め固定の内容が記述されているものと、ユーザプロファイル記憶部３７に実際に記憶されたユーザプロファイルに応じてシステム制御部２１により記述内容が変更されるものとがある。例えば、図４に例示するラインL8の対話データにおいて、「個人情報」の項目には、ユーザプロファイルの（Ｐ－１１：家族構成）の項目に対応した内容（この例では、子供有り）が予め記述されている。また、図６に例示するラインL17の対話データにおいて、「個人情報」の項目には、ユーザプロファイルの（Ｐ－８：趣味）の項目に対応した内容（この例では、スキーが趣味）が予め記述されている。

【００６０】これに対して、例えば、図６に例示するラインL16 の対話データにおいて、「個人情報」の項目における[]内には、システム制御部２１により、ユーザプロファイルの（Ｐ－１０：買物の目的で、よく行くところ）の項目に記述された内容（この例では、Ａデパート）が記述される。また、図６に例示するラインL18 の対話データにおいて、「個人情報」の項目における[]内には、システム制御部２１により、ユーザプロファイルの（Ｐ－９：趣味の目的で、よく行くところ）の項目に記述された内容（この例では、Ｄゴルフ場）が記述される。

【００６１】つまり、上記ラインL16 ，L18 の「個人情報」の項目には、予め、ユーザプロファイルの各項目のうちで何れの項目に記述された内容を[]内に記述するのかを示す指示データがセットされており、システム制御部２１は、上記指示データに基づいて、「個人情報」の項目における[]内に、ユーザプロファイルの内容を記述するようになっている。よって、上記ラインL16 ，L18 の「個人情報」の項目の記述内容は、ユーザプロファイル記憶部３７に実際に記憶されたユーザプロファイルに応じて変更されることとなる。

【００６２】尚、上記ラインL18 の対話データにおける「個人情報」の項目には、予め、ゴルフが趣味、という内容も記述されている。

（Ｃ－１２）：ユーザ発話

「ユーザ発話」の項目には、マイクロフォン５及び音声入力部２５を介して入力されると予想される使用者の発話中のキーワードが、予め記述されている。そして、本実施形態では、この「ユーザ発話」の項目に記述されるキーワード群が、当該制御装置１の認識語彙となっている。

【００６３】但し、図５に例示するラインL11 の対話データにおける「ユーザ発話」の項目にて、<<>>内に記述されたキーワードは、地名を表す固有名詞が入力されることを想定した変数データであり、〔〕内に記述されたキーワードは、料理の種類を表す言葉が入力されることを想定した変数データである。また、図６に例示するラインL17 の対話データにおける「ユーザ発話」の項目にて、<<>>内に記述されたキーワードは、山の名前を表す固有名詞が入力されることを想定した変数データである。

【００６４】（Ｃ－１３）：動作内容

「動作内容」の項目には、当該制御装置１が機器Ｍ３を動作させる際の動作内容（スピーカ７から出力すべきエージェント発話の内容及びスピーカ７以外の他の機器の動作内容）が、予め記述されており、特に、その対話データにて、上記（Ｃ－１）～（Ｃ－１２）の各項目に記述した内容に対応する機器Ｍ３の動作内容が、記述されている。

【００６５】例えば、図５に例示するラインL9の対話データにおいて、「動作内容」の項目には、ナビゲーション装置９に備えられたＣＤ－ＲＯＭドライブ或いは通信装置１７に、現在地から最寄りのレストランを検索させると共に、その検索結果に基づいて、スピーカ７から「お食事ですね。この近くならば<ａ>，<ｂ>，<ｃ>など<X1 >件のお店があります。どこで食べますか。」というエージェント発話を出力させる、といった機器Ｍ３の動作内容が予め記述されている。尚、通信装置１７には、インターネット放送端末と通信させてインターネットから必要な情報を検索させる。

【００６６】また例えば、図５に例示するラインL10 の対話データにおいて、「動作内容」の項目には、上記ＣＤ－ＲＯＭドライブ或いは通信装置１７に、現在地から近い２つのパーキングエリア（或いはサービスエリア）を検索させると共に、その検索結果に基づいて、スピーカ７から「<ｄ>パーキングエリアまであと<X2 >分、次の<ｅ>パーキングエリアならばあと<X3 >分です。」というエージェント発話を出力させる、といった機器Ｍ３の動作内容が予め記述されている。

【００６７】また更に、例えば、図７に例示するラインL19 の対話データにおいて、「動作内容」の項目には、スピーカ７から「室内温度が40℃を越えています。エアコン設定温度を下げます。」というエージェント発話を出力させると共に、エアコン装置１３に車室内の温度を下げさせる、といった機器Ｍ３の動作内容が予め記述されている。

【００６８】尚、図５及び図６において、「動作内容」の項目に記載された<>内の文字のうち、ａからｋまでのアルファベットと、○○レストラン及びＣ山スキー場とは、検索動作によって得られた固有名詞（具体的には、ａ，ｂ，ｃ，ｆ，及び○○レストランは、検索されたレストラン名、ｄ，ｅは検索されたパーキングエリア名、ｇは検索された駐車場名、ｈ，ｉは検索された道路名、ｊ，ｋは検索されたショッピングセンタ名）であり、Ｘ

1からX5までのXで始まる記号は、検索動作によって得られた数や時間などの数値（具体的には、X1は検索されたレストランａ，ｂ，ｃなどの総件数を表す数値、X2，X3は検索されたパーキングエリアｄ，ｅまでの所要時間を表す数値、X4，X5は検索されたレストランｆの予約可能時刻を表す数値）である。

【００６９】一方更に、「動作内容」の項目としては、「個人情報」の項目と同様に、ユーザプロファイル記憶部３７に実際に記憶されたユーザプロファイルに応じてシステム制御部２１により記述内容が変更されるものがある。■例えば、図６に例示するラインL16の対話データにおいて、「動作内容」の項目における[]内には、システム制御部２１により、ユーザプロファイルの（Ｐ－１０：買物の目的で、よく行くところ）の項目に記述された内容（この例では、Aデパート）が記述される。また、図６に例示するラインL18の対話データにおいて、「動作内容」の項目における[]内には、システム制御部２１により、ユーザプロファイルの（Ｐ－９：趣味の目的で、よく行くところ）の項目に記述された内容（この例では、Ｄゴルフ場）が記述される。

【００７０】つまり、上記ラインL16，L18の「動作内容」の項目には、予め、ユーザプロファイルの各項目のうちで何れの項目に記述された内容を[]内に記述するのかを示す指示データがセットされており、システム制御部２１は、上記指示データに基づいて、「動作内容」の項目における[]内に、ユーザプロファイルの内容を記述するようになっている。よって、上記ラインL16，L18の「動作内容」の項目の記述内容（この例の場合、エージェント発話の内容）は、ユーザプロファイル記憶部３７に実際に記憶されたユーザプロファイルに応じて変更されることとなる。

【００７１】具体的に説明すると、図６に例示するラインL16の「動作内容」の項目が示す機器Ｍ３の動作内容としては、上記のように[]内に記述されたAデパートで今日行われているバーゲンの対象商品を、通信装置１７にインターネットから検索させると共に、その検索結果に基づいて、スピーカ７から「Aデパートですね。今日は○○（例えば電器用品）のバーゲンをやってます。」というエージェント発話を出力させる、といったものとなる。また、図６に例示するラインL18の「動作内容」の項目が示す機器Ｍ３の動作内容としては、上記のように[]内に記述された内容（Ｄゴルフ場）に基づき、スピーカ７から「Ｄゴルフ場ですね。予約状況を調べますか。」というエージェント発話を出力させる、といったものとなる。

【００７２】（Ｃ－１４）：推定要求

「推定要求」の項目には、使用者の置かれている実際の状況が、その対話データにおける状況の項目（Ｃ－２～Ｃ－８）に記述した状況になると共に、使用者が、その対話データにおける「ユーザ発話」の項目（Ｃ－１２）に記述されたキーワードを発話し、更に、その対話データにおける「動作内容」の項目（Ｃ－１３）に記述した機器動作が実際に行われたと仮定した場合に、使用者が持つと常識的に考えられる要求の内容が、予め記述されている。

【００７３】そして、この「推定要求」の項目に記述される内容のバリエーション（種類）は、前述した「要求」の項目に記述される内容と同様である。

（Ｃ－１５）：推定状態

「推定状態」の項目には、「推定要求」の項目と同様に、使用者の置かれている実際の状況が、その対話データにおける状況の項目（Ｃ－２～Ｃ－８）に記述した状況になると共に、使用者が、その対話データにおける「ユーザ発話」の項目（Ｃ－１２）に記述されたキーワードを発話し、更に、その対話データにおける「動作内容」の項目（Ｃ－１３）に記述した機器動作が実際に行われたと仮定した場合に、使用者がなると常識的に考えられる状態の内容が、予め記述されている。

【００７４】そして、この「推定状態」の項目に記述される内容のバリエーションは、前述した「状態」の項目に記述される内容と同様である。

（Ｃ－１６）：推定関連要求

「推定関連要求」の項目には、上記「推定要求」の項目と同様の仮定に基づいて、使用者が持つと常識的に考えられる要求のうち、その対話データにおける「推定要求」の項目に記述した内容とは別の要求の内容が、予め記述されている。

【００７５】そして、この「推定関連要求」の項目に記述される内容のバリエーションは、前述した「要求」の項目に記述される内容と同様である。尚、本実施形態において、図４～図８に示すように、「分類」と「動作内容」との２つの項目については、全ての対話データに内容が記述されているが、その他の項目については、内容が記述されない場合もある。つまり、図４～図８における空欄の部分は、内容が記述されていないことを示している。そして、「分類」と「動作内容」以外の何れの項目に内容を記述するかは、「動作内容」の項目に記述する内容に応じて決定すれば良い。但し、「分類」と「動作内容」以外の項目のうち、少なくとも１つ以上の項目には、該当する内容が記述されている。

【００７６】次に、以上のように構成された本実施形態の制御装置１において、システム制御部２１で実行される処理について、図３を用い説明する。図３に示すように、車両のイグニッションスイッチ（図示省略）がオンされるなどして当該制御装置１に電源が供給されると、システム制御部２１は、まずステップ（以下、「Ｓ」と記す）１１０にて、入力装置３及びＩ／Ｆ２３とマイクロフォン５及び音声入力部２５との何れかを介して、キー入力或いは音声として入力される現在の使用者（ユーザ）からの識別情報（例えば、氏名，パスワード，識別

番号，カード番号など）を読み込む。尚、識別情報としては、ＩＤカードの情報を読み込むようにしても良い。

【００７７】そして、続くＳ１２０にて、ユーザプロファイル記憶部３７に記憶されている複数人分のユーザプロファイルの中から、前述した項目（Ｐ－２）に記述されている内容（氏名や他の識別情報）と上記Ｓ１１０で読み込んだ識別情報とが一致しているユーザプロファイルを特定し、その特定したユーザプロファイルを、現在の使用者のユーザプロファイルとして、ＲＡＭ内に予め設定されているバッファ領域に記憶する。

【００７８】そして更に、続くＳ１３０にて、上記バッファ領域に記憶したユーザプロファイルを用いて、対話データ記憶部３５内の対話データベースの内容設定を行う。つまり、対話データベースを構成する各対話データのうち、前述した指示データがセットされている対話データについて、その指示データに基づき、上記バッファ領域内のユーザプロファイルの内容を記述する。そして、このＳ１３０の処理により、図６に例示するラインL16，L18 の対話データにおける「個人情報」と「動作内容」との各項目の[]内に、現在の使用者に固有の内容が記述されることとなる。

【００７９】また更に、このＳ１３０では、入力装置３及びＩ／Ｆ２３を介して入力される使用者からの指令に応じて、対話データベースの「動作内容」の項目に記述されたエージェント発話の内容を、口調が異なるものに切り替える。つまり、本実施形態の制御装置１では、当該装置１の発話上の性格（口調）を、使用者からの指令に応じて、例えば、一般人，社長，若者，友人，女の子など、といった具合に変えることができるようになっている。尚、図４～図８に例示するエージェント発話の内容は、使用者が“一般人”を指定した場合の標準形である。

【００８０】次に、システム制御部２１は、Ｓ１４０にて、後述するＳ２２０以降の処理により対話データベースから使用者が置かれている実際の状況に適合した対話データを検索するために、自己に内蔵されている時計のデータに基づき、現在の日時（年，月，日，時刻）や四季及び時間帯など、対話データベースの「季節」及び「時間帯或いは日時」の項目に対応した実際の状況を検出し、その検出結果を上記バッファ領域に記憶する。

【００８１】また、システム制御部２１は、このＳ１４０にて、前述したように、対話データベースを構成する各対話データのうちで、「時間帯或いは日時」の項目に内容を記述する必要がある対話データ（本実施形態では、図５に例示するラインL11の対話データ）について、その「時間帯或いは日時」の項目に現在の日時を記述する。

【００８２】そして、続くＳ１５０にて、車両の現在地をナビゲーション装置９から読み出すと共に、使用者が意図している目的地をナビゲーション装置９から読み出すか或いはそれまでの使用者との対話内容により把握し、このように検出した現在地と目的地とを上記バッファ領域に記憶する。

【００８３】また、システム制御部２１は、このＳ１５０にて、前述したように、対話データベースを構成する各対話データのうちで、「目的地」の項目に内容を記述する必要がある対話データ（本実施形態では、図５に例示するラインL12，L13 の対話データ）について、その「目的地」の項目に実際の目的地を記述する。また更に、システム制御部２１は、このＳ１５０にて、前述したように、対話データベースを構成する各対話データのうちで、「現在地」の項目に内容を記述する必要がある対話データ（本実施形態では、図５に例示するラインL11～L13 の対話データ）について、その「現在地」の項目に実際の現在地を記述する。

【００８４】次に、システム制御部２１は、続くＳ１６０にて、通信装置１７を介したインターネット検索などにより、下記の①～③の分類にて、現在地と目的地付近での季節行事やイベントを確認し、その結果を上記バッファ領域に記憶する。

①：正月やクリスマスなど、全国共通の季節行事。

【００８５】②：祭りなど、ローカルだが毎年開催されるイベント。

③：ローカル且つ特別のスケジュールで開催されるイベント。

そして、続くＳ１７０にて、対話データベースを構成する各対話データのうちで「分類」の項目の記述内容が“挨拶”である対話データ（具体的には、図４に例示するラインL1～L6の対話データ）の中から、上記Ｓ１４０及びＳ１５０の処理によって上記バッファ領域に記憶された検出結果（季節，時間帯や日時，目的地，現在地）と、後述するＳ２００の処理により検出されて上記バッファ領域に記憶された実際の状況の検出結果（車両周囲の環境，車外状況，車内状況）とに最も適合する対話データを検索する。そして更に、その検索した対話データの「動作内容」の項目に記述されたエージェント発話の内容のテキストデータを音声合成部２７に出力して、スピーカ７から「おはようございます」や「こんにちわ」といった挨拶のための発話（エージェント発話）を出力させる。

【００８６】例えば、上記Ｓ１４０で検出された現在の時刻が、４時から１１時までの間であれば、図４に例示するラインL1の対話データが検索されて、スピーカ７から「おはようございます」という発話が行われることとなる。また、上記Ｓ１４０で検出された現在の時刻が、１１時から１８時までの間であれば、図４に例示するラインL2の対話データが検索されて、スピーカ７から「こんにちわ」という発話が行われることとなる。

【００８７】尚、このＳ１７０の挨拶発話のための処理は、当該制御装置１に電源が投入された直後の１回目だ

けか、或いは更に、使用者との対話を進めて行く上で所定の条件が成立した場合にだけ行われる。次に、システム制御部２１は、Ｓ１８０にて、マイクロフォン５及び音声入力部２５を介して音声信号が入力されない無音状態が、予め定められた一定時間以上に亘って継続したか否かを判定し、上記一定時間以内に音声信号が入力された場合（Ｓ１８０：ＮＯ）には、Ｓ１９０に進んで、上記入力された音声信号から使用者が発話したキーワード（発話キーワード）を抽出すると共に、その抽出したキーワードを上記バッファ領域に記憶する、音声入力処理を行う。そして、その後、Ｓ２００に進む。

【００８８】また、上記Ｓ１８０で無音状態が一定時間以上に亘って継続したと判定した場合（Ｓ１８０：ＹＥＳ）には、上記バッファ領域に、『無音（或いは、無応答）』という内容を記憶し、その後、Ｓ２００に進む。そして、Ｓ２００では、使用者が置かれている実際の状況（実状況）のうちで、上記Ｓ１４０及びＳ１５０で検出した項目以外の実状況（即ち、時間的及び空間的以外の実状況であり、車両周囲の環境，車外状況，及び車内状況の各実状況）を検出するための処理を行い、その検出結果を上記バッファ領域に記憶する。

【００８９】ここで、Ｓ２００の処理では、対話データベースの「環境」，「車外状況」，「車内状況」の各項目に記述される内容ついて、実状況を検出する。例えば、車両周囲の「環境」のうちで、現在走行中の道路が高速道路，一般道路，国道，県道などの何れであるかといった道路環境の実状況と、現在走行中の道路の速度制限や、現在走行中の道路が一方通行であるとか進入禁止であるといった交通環境の実状況と、車両の現在位置が海の近くであるとか山の中であるといった地理環境の実状況との各々は、ＶＩＣＳ情報（ＶＩＣＳの放送端末からの情報）を通信装置１７で受信したり、ナビゲーション装置９からの情報（現在位置及び地図データ）に基づき検出する。そして、車両周囲の「環境」のうちで、現在走行中の道路が凍結しているとか滑り易いといった道路状態の実状況は、ブレーキ装置を制御している他の制御装置からの情報に基づき検出する。

【００９０】また、「車外状況」のうちで、現在地及び目的地の天候（晴れ，曇り，小雨，雨，大雨，雪，雷，台風など）の実状況と、現在走行中の道路が渋滞しているとか、すいているといった交通状況の実状況との各々は、ＶＩＣＳ情報を通信装置１７で受信することにより検出する。尚、現在地の天候が雨であることは、各種センサ１９のうちの雨滴センサの信号から検出することもできる。そして、「車外状況」のうちで、追従車両の有無とか先行車両の有無といった車両周辺状況の実状況は、各種センサ１９のうちの超音波センサからの信号やカメラによって検出する。

【００９１】一方、「車内状況」のうちで、室内温度の実状況は、各種センサ１９のうちの温度センサからの信号によって検出する。また、「車内状況」のうちで、車両の乗員数（１人，２人，３人以上）といった乗車状態の実状況は、例えば、シートの座面に加わる圧力を検知する圧力センサからの信号によって検出する。

【００９２】そして、「車内状況」のうちで、運転状態（渋滞した道路での走行，快適な走行，振動ありなど）や、乗車状態（家族連れ，どの座席にどの様な人が座っているかという詳細な内容）、或いは更に、移動目的（家族とのドライブ，友人とのドライブ，恋人とのデートなど）といった、ナビゲーション装置９，通信装置１７，各種センサ１９，及び他の制御装置などからの情報により自動的に検出できない実状況については、使用者に対してスピーカ７からの発話や表示装置１１に表示させるメッセージにより問い合わせて、使用者から音声やキー入力によって教示してもらうことで検出する。

【００９３】次に、システム制御部２１は、Ｓ２１０にて、使用者の現在の要求と状態とを推定するための処理を行う。ここで、Ｓ２１０の処理では、対話データベースの中から、後述するＳ２７０及びＳ２８０の前回の処理によって機器Ｍ３を動作させるのに用いられた対話データを読み出し、その読み出した対話データの「推定要求」と「推定関連要求」との両項目に記述されている内容を、使用者が現在持っていると推定される要求として上記バッファ領域に記憶し、更に、上記読み出した対話データの「推定状態」の項目に記述されている内容を、使用者が現在なっていると推定される状態として上記バッファ領域に記憶する。

【００９４】このため、Ｓ２１０の処理を終えた時点において、ＲＡＭ内の上記バッファ領域には、現在の使用者のユーザプロファイル（個人情報）と、使用者が発話したキーワード（但し、無音或いは無応答という内容も含む）と、使用者が置かれている実状況を表す内容と、使用者の要求及び状態を推定した内容とが記憶されることとなる。

【００９５】そこで、システム制御部２１は、続くＳ２２０にて、対話データベースをアクセスして各対話データを読み出し、その各対話データについて、「季節」，「時間帯或いは日時」，「目的地」，「現在地」，「環境」，「車外状況」，「車内状況」，「要求」，「状態」，「個人情報」，及び「ユーザ発話」の各項目に記述された内容と、上記バッファ領域に記憶されている内容とのマッチングを調査する。

【００９６】具体的には、使用者が実際に発話したキーワードと、対話データの「ユーザ発話」の項目に記述されているキーワードとのマッチング、使用者の要求を推定した内容と、対話データの「要求」の項目に記述されている内容とのマッチング、使用者の状態を推定した内容と、対話データの「状態」の項目に記述されている内容とのマッチング、使用者が置かれている実状況を表す各内容と、対話データの「季節」，「時間帯或いは日

時」，「目的地」，「現在地」，「環境」，「車外状況」，「車内状況」の各項目に記述されている内容とのマッチング、及び、現在の使用者のユーザプロファイルと、対話データの「個人情報」の項目に記述されている内容とのマッチング、の各々について調査する。

【００９７】また、このＳ２２０では、特に、対話データベース中の対話データのうちで、「要求」と「ユーザ発話」の項目に内容が記述されている対話データを優先的に読み出す。そして、マッチングを調査するための処理としては、読み出した対話データの上記各項目について、上記バッファ領域に記憶されている内容と一致するものに対し所定値（例えば１点）ずつ点数を付け、その合計点数を、マッチングの度合を表す評価値とする。但し、対話データの各項目のうちの特定の項目について、点数を変えておくようにしても良い。

【００９８】そして更に、Ｓ２２０の処理では、各対話データのうちで、算出した評価値が最も大きいものから順にＮ個（例えば８個）の対話データについて、そのライン番号（即ち、図４～図８に示すラインL の番号）を、ＲＡＭ内に予め設定された上記バッファ領域とは異なる特定領域に記憶する。

【００９９】そして、続くＳ２３０にて、上記Ｓ２２０で算出した最大の評価値（即ち、上記特定領域にライン番号が記憶されたＮ個の対話データのうちで、算出された評価値が最大である対話データの評価値）が、予め設定された閾値よりも大きいか否かを判定し、その閾値よりも大きくなければ、前述したＳ１９０或いはＳ２００の処理によって検出すべき内容（使用者の発話キーワード或いは実状況の内容）が不足していると判断して、Ｓ２４０に移行する。

【０１００】そして、このＳ２４０にて、不足している検出内容を使用者に問い合わせる発話をスピーカ７から出力して、その後、Ｓ１８０に戻る。すると、Ｓ１８０～Ｓ２２０の処理が再び行われることとなるが、このようにＳ２４０の処理による使用者への問い合わせが行われた場合には、Ｓ２２０では、上記特定領域にライン番号が記憶されたＮ個の対話データについてのみ、評価値が計算される。

【０１０１】また、上記Ｓ２３０にて、上記Ｓ２２０で算出した最大の評価値が閾値よりも大きいと判定した場合には、Ｓ２５０に進む。このＳ２５０では、上記特定領域にライン番号が記憶されたＮ個の対話データのうちで、算出された評価値が最大である対話データが複数個あるか否かを判定し、複数個ある場合には、その複数個の対話データから１つの対話データを絞り込む必要があると判断して、Ｓ２６０に移行する。

【０１０２】そして、このＳ２６０にて、上記複数個の対話データから１つの対話データを絞り込むための内容を、使用者に問い合わせる発話をスピーカ７から出力して、その後、Ｓ１８０に戻る。すると、この場合にも、Ｓ１８０～Ｓ２２０の処理が再び行われることとなるが、このようにＳ２６０の処理による使用者への問い合わせが行われた場合にも、Ｓ２２０では、上記特定領域にライン番号が記憶されたＮ個の対話データについてのみ、評価値が計算される。

【０１０３】一方、上記Ｓ２５０で否定判定された場合、即ち、上記特定領域にライン番号が記憶されたＮ個の対話データのうちで、評価値が最大である対話データが１つである場合には、Ｓ２７０に進んで、評価値が最大となった対話データを読み出し、その対話データの「動作内容」の項目に記述されている内容を、機器Ｍ３の動作内容としてＲＡＭ内に設定する。そして、続くＳ２８０にて、上記Ｓ２７０で設定された動作内容に従って、機器Ｍ３を動作させる。

【０１０４】つまり、Ｓ２２０～Ｓ２８０の処理では、対話データベースを構成する各対話データのうちで、「季節」，「時間帯或いは日時」，「目的地」，「現在地」，「環境」，「車外状況」，「車内状況」，「要求」，「状態」，「個人情報」，及び「ユーザ発話」の各項目に記述された内容が上記バッファ領域に記憶されている内容（使用者が置かれている実状況を表す内容、使用者の要求と状態を推定した内容、現在の使用者のユーザプロファイル、及び、使用者が発話したキーワード）に最も適合した対話データを検索して選択し、その選択した対話データの「動作内容」に記述されている内容に従って、スピーカ７を始めとする機器Ｍ３を動作させるようにしている。

【０１０５】そして、その後、Ｓ２９０に進んで、使用者との対話が終了したか否かを判定する。尚、この判定では、例えば、使用者からの「うるさい」とか「さよなら」といった発話キーワードが入力された場合に、対話が終了したと判定する。そして、対話が終了していないと判定した場合には、Ｓ１４０へ戻るが、対話が終了したと判定した場合には、当該図３の処理を終了する。

【０１０６】次に、以上のような制御装置１の作用について、具体例を挙げて説明する。まず、車両が一般道路を走行している際に、使用者が“めし”や“ご飯”といったキーワードを発話すると、Ｓ２２０～Ｓ２８０の処理により、図５に例示するラインL9の対話データが選択されて、その対話データ（L9）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、ナビゲーション装置９のＣＤ－ＲＯＭドライブ或いは通信装置１７により、現在地から最寄りのレストランが検索されて、スピーカ７から「お食事ですね。この近くならば<a>，<b>，<c>など<X1>件のお店があります。どこで食べますか。」というエージェント発話が出力される。

【０１０７】これに対し、車両が高速道路を走行している際に、使用者が“めし”や“ご飯”といったキーワードを発話すると、Ｓ２２０～Ｓ２８０の処理により、図

５に例示するラインL10 の対話データが選択されて、その対話データ（L10 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、ナビゲーション装置９のＣＤ－ＲＯＭドライブ或いは通信装置１７により、現在地から近い２つのパーキングエリアが検索されて、スピーカ７から「<ｄ>パーキングエリアまであと<X2 >分、次の<ｅ>パーキングエリアならばあと<X3>分です。」というエージェント発話が出力される。

【０１０８】このように、本実施形態の制御装置１では、マイクロフォン５及び音声入力部２５を介して入力される使用者の発話キーワードだけでなく、使用者が置かれている実際の状況に応じて、機器Ｍ３の動作内容を変えることができる。よって、使用者の発話内容が同じであっても、使用者が置かれている状況に応じて、機器Ｍ３の動作内容を最適なものにすることができ、使用者からのより少ない入力情報で、その使用者の要望に即した機器動作（この例の場合は、情報提供動作）を実現することができる。

【０１０９】一方、例えば車両が愛知県・刈谷市の一般道路を走行している際に、使用者が“岡崎”，“めし”，“インド料理”という３つのキーワードを発話すると、Ｓ２２０～Ｓ２８０の処理により、図５に例示するラインL11 の対話データが選択されて、その対話データ（L11 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、通信装置１７により、インターネットなどから、愛知県・岡崎市にあるインド料理のレストランｆと、そのレストランｆの予約可能時刻とが検索されて、スピーカ７から「<X4 >時<X5 >分に、<ｆ>が予約できます。」というエージェント発話が出力される。尚、上記ラインL11 の対話データにおいて、「現在地」の項目には、それまでのＳ１５０の処理により<刈谷>が記述されている。

【０１１０】そして、こうして上記ラインL11 の対話データが選択された場合には、次のＳ２１０の処理により、ラインL11 の対話データの「推定要求」と「推定関連要求」との両項目に記述されている内容（食事，行楽，駐車場，休憩，飲み物）が、使用者の推定される要求として上記バッファ領域に記憶されると共に、ラインL11 の対話データの「推定状態」の項目に記述されている内容（空腹の前）が、使用者の推定される状態として上記バッファ領域に記憶される。

【０１１１】このため、上記ラインL11 の対話データに応じたエージェント発話が行われた後に、使用者が特に応答しなければ、次のＳ２２０～Ｓ２８０の処理により、図５に例示するラインL12 の対話データ（即ち、「環境」の項目に“一般道路”が記述され、「要求」の項目に“食事”と“駐車場”とが記述された対話データ）が選択されて、その対話データ（L12 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、通信装置１７により、ＶＩＣＳ情報などから、上記レストランｆの近くにある駐車場ｇが検索されて、スピーカ７から「駐車場は<ｇ>が空いています。」というエージェント発話が出力される。尚、上記ラインL12 の対話データにおいて、「目的地」と「現在地」との各項目には、直前のＳ１５０の処理により、夫々<岡崎のレストランｆ>と<刈谷>とが記述されている。

【０１１２】また更に、こうして上記ラインL12 の対話データが選択された場合には、次のＳ２１０の処理により、ラインL12 の対話データの「推定要求」の項目に記述されている内容（経路案内）が、使用者の推定される要求として上記バッファ領域に記憶されると共に、ラインL12 の対話データの「推定状態」の項目に記述されている内容（移動の準備）が、使用者の推定される状態として上記バッファ領域に記憶される。

【０１１３】このため、上記ラインL12 の対話データに応じたエージェント発話が行われた後に、使用者が特に応答しなければ、次のＳ２２０～Ｓ２８０の処理により、図５に例示するラインL13 の対話データ（即ち、「環境」の項目に“一般道路”が記述され、「要求」の項目に“経路案内”が記述された対話データ）が選択されて、その対話データ（L13 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、通信装置１７により、ＶＩＣＳ情報などから、現在地（愛知県・刈谷市）から目的地（愛知県・岡崎市）へ行くための主要な道路ｈ，ｉと、その道路ｈ，ｉの渋滞状況とが検索されて、スピーカ７から「<ｈ>は混雑していますので<ｉ>で行くことをお勧めします。」といったエージェント発話が出力される。尚、上記ラインL13 の対話データにおいて、「目的地」と「現在地」との各項目には、直前のＳ１５０の処理により、夫々<岡崎>と<刈谷>とが記述されている。

【０１１４】一方、前述したラインL9の対話データが選択された場合には、次のＳ２１０の処理により、ラインL9の対話データの「推定要求」と「推定関連要求」との両項目に記述されている内容（食事，駐車場，休憩，飲み物）が、使用者の推定される要求として上記バッファ領域に記憶されると共に、ラインL9の対話データの「推定状態」の項目に記述されている内容（空腹）が、使用者の推定される状態として上記バッファ領域に記憶される。

【０１１５】このため、例えば、上記ラインL9の対話データに応じたエージェント発話が行われた後に、使用者が“どこかいいところ”というキーワードを発話し、しかも、その際に家族連れで乗車しているのであれば、次のＳ２２０～Ｓ２８０の処理により、図６に例示するラインL14 の対話データ（即ち、「環境」の項目に“一般道路”が記述され、「車内状況」の項目に“家族連れ”が記述され、「要求」の項目に“食事”が記述され、

「状態」の項目に“空腹”が記述され、「ユーザ発話」の項目に“どこかいいところ”が記述された対話データ）が選択されて、その対話データ（L14 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、通信装置１７により、インターネットなどから、現在地から最寄りのファミリーレストランが検索されて、スピーカ７から「○○レストランでどうですか。」というエージェント発話が出力される。

【０１１６】また、例えば、車内に人が乗っていると共に、車室内の温度が30℃以上であり、しかも、Ｓ２１０の処理によって推定された使用者の要求が“エアコン操作不要”でない場合には、Ｓ２２０～Ｓ２８０の処理により、図７に例示するラインL20 の対話データが選択されて、その対話データ（L20 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、スピーカ７から「暑いですね。エアコン設定温度を下げますか。」という問いかけのエージェント発話が出力される。

【０１１７】そして、こうして上記ラインL20 の対話データが選択された場合には、次のＳ２１０の処理により、ラインL20 の対話データの「推定要求」の項目に記述されている内容（エアコン設定温度を下げる）が、使用者の推定される要求として上記バッファ領域に記憶されると共に、ラインL20 の対話データの「推定状態」の項目に記述されている内容（暑い，喉が乾いた）が、使用者の推定される状態として上記バッファ領域に記憶される。

【０１１８】このため、上記ラインL20 の対話データに応じたエージェント発話が行われた後に、使用者が“はい”や“うん”或いは“下げる”というキーワードを発話するか、無応答であると、Ｓ２２０～Ｓ２８０の処理により、図８に例示するラインL22 の対話データが選択されて、その対話データ（L22 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、スピーカ７から「わかりました。エアコン設定温度を下げます。」というエージェント発話が出力されると共に、エアコン装置１３が車室内の温度を下げるように動作することとなる。

【０１１９】これに対して、上記ラインL20 の対話データに応じたエージェント発話が行われた後に、使用者が“いいえ”や“いや”或いは“下げない”や“このまま”というキーワードを発話すると、Ｓ２２０～Ｓ２８０の処理により、図８に例示するラインL23 の対話データが選択されて、その対話データ（L23 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、スピーカ７から「このままにしておきます。」というエージェント発話が出力されると共に、エアコン装置１３が車室内の温度を維持するように動作することとなる。

【０１２０】また、例えば、車室内の温度が20℃以上である場合に、使用者が“あつい”や“あついなあ”というキーワードを発話すると、Ｓ２２０～Ｓ２８０の処理により、図７に例示するラインL21 の対話データが選択されて、その対話データ（L21 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、前述したラインL20 の対話データが選択された場合と同様に、スピーカ７から「暑いですね。エアコン設定温度を下げますか。」という問いかけのエージェント発話が出力される。

【０１２１】そして、こうして上記ラインL21 の対話データが選択された場合には、次のＳ２１０の処理により、ラインL21 の対話データの「推定要求」と「推定関連要求」との両項目に記述されている内容（エアコン設定温度を下げる，何か飲みたい，休みたい）が、使用者の推定される要求として上記バッファ領域に記憶されると共に、ラインL21 の対話データの「推定状態」の項目に記述されている内容（暑い，喉が乾いた）が、使用者の推定される状態として上記バッファ領域に記憶される。

【０１２２】このため、上記ラインL21 の対話データに応じたエージェント発話が行われた後に、使用者が“はい”や“うん”といったキーワードを発話すれば、Ｓ２２０～Ｓ２８０の処理により、前述したラインL22 の対話データが選択され、逆に、使用者が“いいえ”や“いや”といったキーワードを発話すれば、Ｓ２２０～Ｓ２８０の処理により、前述したラインL23 の対話データが選択されることとなる。

【０１２３】つまり、本実施形態の制御装置１では、Ｓ２１０の処理により、使用者からの実際の発話キーワードと、使用者の実状況と、機器Ｍ３を実際に動作させた動作内容との少なくとも１つに基づいて、使用者の要求が推定されることとなる。そして、Ｓ２２０～Ｓ２８０の処理により、Ｓ２１０の処理で推定された要求を「要求」の項目の記述内容として持つ対話データが選択され、その選択された対話データの「動作内容」の項目に記述された動作内容に基づいて、機器動作が行われる。尚、Ｓ２１０の処理にて、使用者からの実際の発話キーワードと、使用者の実状況と、機器Ｍ３の動作内容とのうちで、何れの内容に基づき使用者の要求が推定されるかは、前回のＳ２８０の処理により機器Ｍ３を動作させるのに用いられた対話データの記述状態による。

【０１２４】よって、本実施形態の制御装置１によれば、使用者の要望に、より即した機器動作（上記例の場合は、情報提供動作とエアコン装置１３の動作）を実現することができる。次に、例えば、９時から２１時までの時間帯に家族連れで一般道路を走行している際に、使用者が“買物”や“ショッピング”といったキーワードを発話すると、Ｓ２２０～Ｓ２８０の処理により、図６に例示するラインL15 の対話データが選択されて、その

対話データ（L15 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、ナビゲーション装置９のＣＤ－ＲＯＭドライブ或いは通信装置１７により、現在地から最寄りのショッピングセンタｊ，ｋが検索されて、スピーカ７から「お買物でしたら、<ｊ>と<ｋ>が近くにあります。」というエージェント発話が出力される。

【０１２５】そして、こうして上記ラインL15 の対話データが選択された場合には、次のＳ２１０の処理により、ラインL15 の対話データの「推定要求」と「推定関連要求」との両項目に記述されている内容（買物，駐車場）が、使用者の推定される要求として上記バッファ領域に記憶されると共に、ラインL15 の対話データの「推定状態」の項目に記述されている内容（移動の準備）が、使用者の推定される状態として上記バッファ領域に記憶される。

【０１２６】このため、上記ラインL15 の対話データに応じたエージェント発話が行われた後に、使用者が“いつものところ”というキーワードを発話し、しかも、その使用者のユーザプロファイルの項目（Ｐ－１０：買物の目的で、よく行くところ）に記述されている内容が“Ａデパート”であれば、次のＳ２２０～Ｓ２８０の処理により、図６に例示するラインL16 の対話データが選択される。

【０１２７】即ち、「時間帯或いは日時」の項目に“９時から２１時”が記述され、「環境」の項目に“一般道路”が記述され、「車内状況」の項目に“家族連れ”が記述され、「要求」の項目に“買物”が記述され、「状態」の項目に“移動の準備”が記述され、「個人情報」の項目に“Ａデパートによく行く”が記述され、「ユーザ発話」の項目に“いつものところ”が記述された対話データ（L16 ）が選択されて、その対話データ（L16 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、通信装置１７により、インターネットなどから、Ａデパートで今日行われているバーゲンの対象商品が検索されて、スピーカ７から「Ａデパートですね。今日は○○（例えば電器用品）のバーゲンをやってます。」というエージェント発話が出力される。尚、上記ラインL16の対話データにおいて、「個人情報」と「動作内容」との各項目における[]内には、Ｓ１３０の処理により、現在の使用者に固有の“Ａデパート”が記述されている。

【０１２８】一方、例えば、使用者が冬の季節に“Ｃ山”，“スキー”という２つのキーワードを発話し、しかも、その使用者のユーザプロファイルの項目（Ｐ－８：趣味）に記述されている内容が“スキー”であれば、Ｓ２２０～Ｓ２８０の処理により、図６に例示するラインL17 の対話データが選択されて、その対話データ（L17 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、スピーカ７から「Ｃ山スキー場へのルートガイドを開始します。」というエージェント発話が出力されて、ナビゲーション装置９による現在地からＣ山スキー場への経路案内動作が開始される。

【０１２９】また、例えば、使用者が“ゴルフ”，“いつもの”という２つのキーワードを発話し、しかも、その使用者のユーザプロファイルの項目（Ｐ－８：趣味）に記述されている内容が“ゴルフ”であると共に、同ユーザプロファイルの項目（Ｐ－９：趣味の目的で、よく行くところ）に記述されている内容が“Ｄゴルフ場”であれば、Ｓ２２０～Ｓ２８０の処理により、図６に例示するラインL18 の対話データが選択されて、その対話データ（L18 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、スピーカ７から「Ｄゴルフ場ですね。予約状況を調べますか。」というエージェント発話が出力される。尚、上記ラインL18 の対話データにおいて、「個人情報」と「動作内容」との各項目における[]内には、Ｓ１３０の処理により、現在の使用者に固有の“Ｄゴルフ場”が記述されている。

【０１３０】このように、本実施形態の制御装置１では、使用者に固有の情報であるユーザプロファイルが、対話データを選択する際のパラメータの１つとなり、その使用者のユーザプロファイルに応じた機器Ｍ３の動作内容が設定される。よって、使用者に特有の要望に即した機器動作を実現することができる。

【０１３１】しかも、ユーザプロファイル記憶部３７には複数人分のユーザプロファイルが記憶されると共に、Ｓ１１０～Ｓ１３０の処理により、現在の使用者のユーザプロファイルを特定して、その特定したユーザプロファイルに応じて、対話データベースの内容（「個人情報」と「動作内容」の項目の記述内容）を自動的に変更するようにしている。そして、上記特定したユーザプロファイルに適合する対話データを選択して、その対話データの「動作内容」の項目に記述された内容に従い、機器Ｍ３の動作内容を設定するようにしている。

【０１３２】よって、ユーザプロファイル記憶部３７にユーザプロファイルが記憶された複数人のうちの何れの人が、当該制御装置１を使用しても、その人毎に機器Ｍ３の動作内容を変えることができ、その使用者に特有の要望に一層即した機器動作を実現することができる。次に、例えば、車内に人が乗っており、しかも、車室内の温度が上昇して40℃以上になると、Ｓ２２０～Ｓ２８０の処理により、図７に例示するラインL19 の対話データが選択されて、その対話データ（L19 ）の「動作内容」の項目に記述された内容が機器Ｍ３の動作内容として設定される。その結果、スピーカ７から「室内温度が40℃を越えています。エアコン設定温度を下げます。」というエージェント発話が出力されると共に、エアコン装置１３が車室内の温度を下げるように動作することとな

る。

【０１３３】つまり、本実施形態の制御装置１では、検出した使用者の実状況のみからも、対話データが選択されて、機器Ｍ３の動作内容が設定される。よって、使用者が置かれている状況が特定の状況になった場合に、使用者の発話などの他の要因に拘らず、機器Ｍ３を所定の動作内容にて動作させることができ、有利である。

【０１３４】以上詳述したように、本実施形態の制御装置１によれば、使用者の状況と要求に応じて、発話内容やエアコン装置１３などの機器の動作を最適なものにすることができ、しかも、使用者に有益な情報を的確に提供することができる。また、使用者と親しみのある対話を行って、使用者に親近感を持たせることもできる。

【０１３５】尚、本実施形態では、Ｓ１８０及びＳ１９０の処理が、入力手段Ｍ１に相当し、Ｓ１４０，Ｓ１５０，及びＳ２００の処理が、状況検出手段Ｍ５に相当し、Ｓ２２０～Ｓ２７０の処理が、設定手段Ｍ９に相当し、Ｓ２８０の処理が、機器制御手段Ｍ１１に相当している。そして、Ｓ２１０の処理が、要求推定手段Ｍ１３に相当し、Ｓ１１０及びＳ１２０の処理が、識別手段Ｍ１９に相当し、Ｓ１３０の処理が、変更手段Ｍ１７に相当している。

【０１３６】また、本実施形態では、対話データ記憶部３５が、動作内容設定用データ記憶手段Ｍ７に相当し、ユーザプロファイル記憶部３７が、個人情報記憶手段Ｍ１５に相当している。そして、図４～図８に例示した対話データのうちで、ラインL9～L11 , L15 , L21 の対話データが、動作内容設定用データＤ１に相当し、ラインL12 ～L14 , L20 , L22 , L23 の対話データが、第２の動作内容設定用データＤ２に相当し、ラインL16 ～L18 の対話データが、第３の動作内容設定用データＤ３に相当し、ラインL19 の対話データが、第４の動作内容設定用データＤ４に相当している。

【０１３７】次に、他の具体例について説明する。まず、本実施形態の制御装置１では、ＶＩＣＳ情報や、対話による使用者からの教示、或いはセンサからの信号により、天候の実状況を把握している（Ｓ２００）。尚、使用者から教示を受ける場合には、例えば、「今、晴れてますか。」といった問い合わせのエージェント発話を行って、使用者から「そうだ」とか「いや、雨だ」といった返事をもらえば良い。

【０１３８】よって、例えば天候が晴れの場合には、「今日は、ゴルフには絶好の天気ですね。」といったエージェント発話を行って、使用者に親しみのある対話をすることができる。また、本実施形態の制御装置１では、自己に内蔵されている時計のデータに基づいて、現在の日時や四季及び時間帯を把握しているため（Ｓ１４０）、例えば、季節が秋の場合には、「嵐山の紅葉は今が見頃じゃないですか。」といったエージェント発話を行ったり、時間帯が昼の場合には、「そろそろお昼ご飯の時間ですね。次のサービスエリアは１０ｋｍ先です。」といったエージェント発話を行って、使用者に親しみのある対話をすることができる。

【０１３９】一方、制御装置１が把握する車内状況のうちの乗車状態であって、どの座席にどの様な人が座っているかという詳細な内容は、下記の［］内のように記述することができる。

［SEAT_ID , PSTYPE, PATYPE, PTYPE , PROFILE_ID］

尚、SEAT_ID は、座席（シート）の分類を表すデータであり、SEAT_ID =0が運転席を示し、SEAT_ID =1が助手席を示し、SEAT_ID =2が後部座席右を示し、SEAT_ID =3が後部座席中央を示し、SEAT_ID =4が後部座席左を示す。

【０１４０】また、PSTYPEは、乗員の性別を表すデータであり、PSTYPE=0が荷物や動物などの人間以外を示し、PSTYPE=1が男性を示し、PSTYPE=2が女性を示す。また更に、PATYPEは、乗員の年齢の分類を表すデータであり、PATYPE=0が乳児を示し、PATYPE=1が幼児を示し、PATYPE =2が小学生を示し、PATYPE=3が中学生を示し、PATYPE=4が高校生を示し、PATYPE=5が若者を示し、PATYPE=6が一般人を示し、PATYPE=7が老人を示す。

【０１４１】そして、PTYPE は、乗員のタイプを表すデータであり、PTYPE =0が運転者（ドライバ）を示し、PTYPE =1が運転者の配偶者を示し、PTYPE =2が運転者の子供を示し、PTYPE =3が運転者の親を示し、PTYPE =4が運転者の他の家族を示し、PTYPE =5が家族以外の親しい人を示し、PTYPE =6が運転者の知人を示し、PTYPE =7がその他の人を示す。

【０１４２】そして更に、PROFILE_IDは、乗員の氏名或いは名前を表すデータである。よって、例えば、［SEAT_ID , PSTYPE, PATYPE, PTYPE , PROFILE_ID］＝［2, 1 , 2 ; 2 , ○○太郎］の場合には、後部座席右に男子小学生であって、運転者の子供である○○太郎が座っていることを表す。

【０１４３】そして、このような状況を制御装置１が把握することにより、例えば下記の（１）～（３）のようなエージェント発話とそれに対応する動作とを行うことができる。

（１）車両が走行状態から停車した時に、「停車しました。太郎君、車外に出るときは後ろを確認してドアを開けて下さい。」といった警告のエージェント発話を行う。

【０１４４】（２）車両が停車状態から発進する時に、「発進します。後部座席右はチャイルドロックをかけます。」といったエージェント発話を行うと共に、他の制御装置に後部右側ドアのチャイルドロックをかけさせる。

（３）使用者が“太郎”，“テレビ電話”という２つのキーワードを発話した時に、「太郎君にテレビ電話のカメラをあわせます。話す相手は誰ですか。」といった問い合わせのエージェント発話を行った後に、他の制御装

置にテレビ電話のカメラの位置姿勢や焦点を太郎へ向けて調節させる。

【０１４５】また、例えば、［SEAT_ID，PSTYPE，PATYPE，PTYPE，PROFILE_ID］＝［２，２，６，１，○○花子］，［SEAT_ID，PSTYPE，PATYPE，PTYPE，PROFILE_ID］＝［２，２，０，２，○○さやか］の場合には、後部座席右に運転者の妻である○○花子が座っており、しかも、その花子が自分の子供で女の乳児である○○さやかを抱いていることを表す。

【０１４６】そして、このような状況を制御装置１が把握することにより、例えば、車両の運転状況に応じて、「３００メートル先から右方向に急カーブです。花子さん、さやかちゃんをしっかりと抱いて下さい。」といった警告のエージェント発話を行うことができる。

【０１４７】一方また、制御装置１が把握する車内状況のうちのオーディオ環境の内容は、例えば、以下に説明する１２ビットのデータ（以下、AUDIO_ENV と記す）によって記述することができる。即ち、AUDIO_ENV の最下位ビットを０ビット目とした場合、例えば、０ビット目はカセットのオン／オフを示し、１ビット目はＣＤプレーヤのオン／オフを示し、２ビット目はＭＤプレーヤのオン／オフを示し、３ビット目はＤＶＤのオン／オフを示し、４ビット目はラジオのＦＭ放送を受信しているか否かを示し、５ビット目はラジオのＡＭ放送を受信しているか否かを示し、６ビット目は道路交通センタの放送を受信しているか否かを示し、７ビット目はテレビのオン／オフを示し、８ビット目はビデオのオン／オフを示し、９ビット目は電話のオン／オフを示し、１０ビット目と１１ビット目は不使用か予備のビットである。

【０１４８】よって、例えば、AUDIO_ENV ＝［1000 0001 0100］の場合には、カセットとテレビと電話とがオンになっていることを表す。尚、この例では、［］内の最も左側のビットが、０ビット目である。そして、このような状況を制御装置１が把握することにより、例えば下記のようなエージェント発話とそれに対応する動作とを行うことができる。

【０１４９】まず、上記のようにカセットとテレビと電話とがオンになっている時に、「電話中です。カセットとテレビの音量を下げてください。」といったエージェント発話を行う。更に、車両が高速道路のトンネルに入ったことを検出すると、「トンネルに入りました。道路交通センタの放送をお伝えします。」といったエージェント発話を行った後に、他のオーディオ（この場合、カセットとテレビ）の音量を下げる。尚、これにより、AUDIO_ENV ＝［1000 0011 0100］となる。

【０１５０】そして、これと同時に、車両のヘッドライトが点灯されていない場合には、「ヘッドライトを点灯させます。」といったエージェント発話を行った後に、ヘッドライトを点灯させる。以上、本発明の一実施形態について説明したが、本発明は、上記実施形態に限定されるものではなく、種々の形態を採り得ることは言うまでもない。

【０１５１】例えば、上記実施形態の制御装置１は、車両に搭載されるものであったが、本発明は、室内に備え付けの各種機器を制御する装置に対しても、同様に適用することができる。また、上記実施形態の制御装置１は、使用者の意図が反映された情報として、使用者の発話キーワードを入力するものであったが、使用者のキー操作による情報を入力するようにしても良い。

【図面の簡単な説明】

【図１】　本発明の制御装置の構成を例示するブロック図である。

【図２】　実施形態の制御装置の構成を表すブロック図である。

【図３】　実施形態の制御装置で実行される処理を表すフローチャートである。

【図４】　対話データベースの一例を説明する図のうちの、その１である。

【図５】　対話データベースの一例を説明する図のうちの、その２である。

【図６】　対話データベースの一例を説明する図のうちの、その３である。

【図７】　対話データベースの一例を説明する図のうちの、その４である。

【図８】　対話データベースの一例を説明する図のうちの、その５である。

【符号の説明】

１…制御装置　　３…入力装置　　５…マイクロフォン　　７…スピーカ

９…ナビゲーション装置　　１１…表示装置　　１３…エアコン装置

１５…オーディオ装置　　１７…通信装置　　１９…各種センサ

２１…システム制御部　　２３…インタフェース（Ｉ／Ｆ）

２５…音声入力部　　２７…音声合成部

２９…機器制御インタフェース（機器制御Ｉ／Ｆ）

３１…インターネットアドレスデータベース　　３３…検索制御部

３５…対話データ記憶部　　L1～L23 …対話データ

３７…ユーザプロファイル記憶部

Ｍ１…入力手段　　Ｍ３…機器　　Ｍ５…状況検出手段

Ｍ７…動作内容設定用データ記憶手段　　D1…動作内容設定用データ

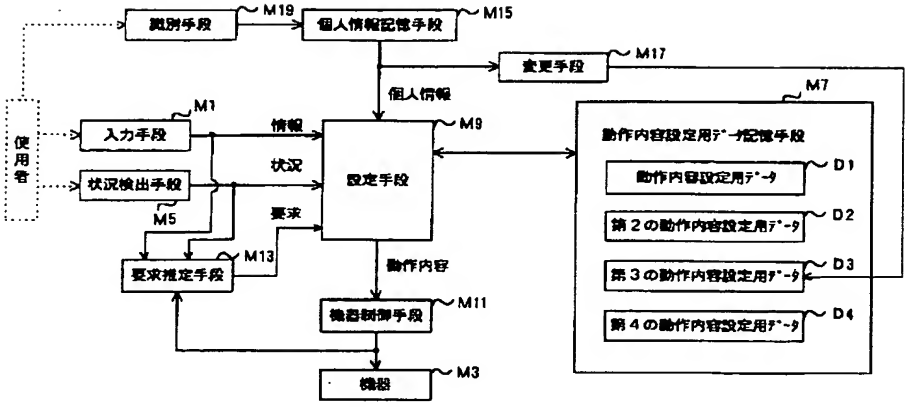
Ｄ２…第２の動作内容設定用データ　　Ｄ３…第３の動作内容設定用データ

Ｄ４…第４の動作内容設定用データ　　Ｍ９…設定手段

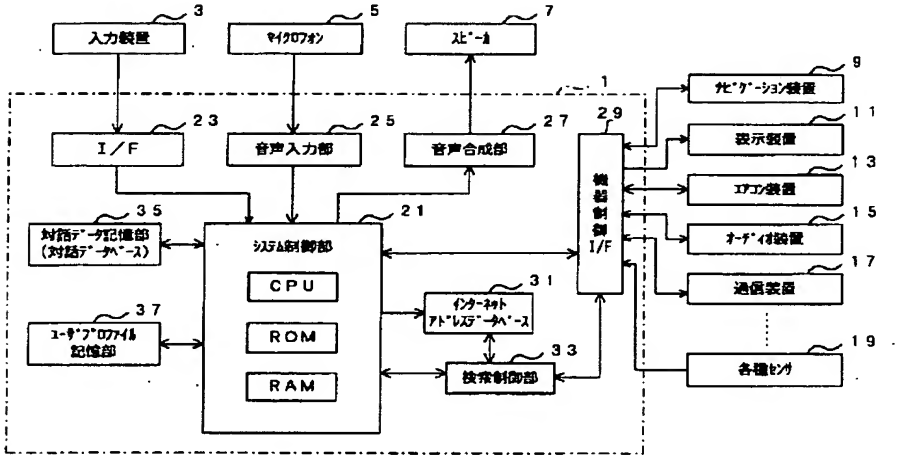
Ｍ１１…機器制御手段　　Ｍ１３…要求推定手段

Ｍ１５…個人情報記憶手段　　Ｍ１７…変更手段　　Ｍ１９…識別手段

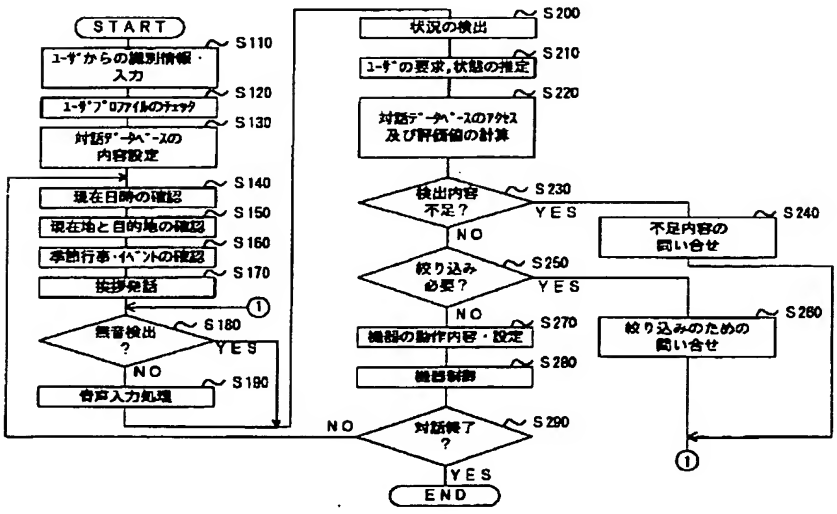
【図１】


識別手段
M19
個人情報記憶手段
M15
変更手段
M17
個人情報
M7
動作内容設定用データ記憶手段
使用者
入力手段
M1
情報
M9
設定手段
動作内容設定用データ
D1
状況検出手段
状況
M5
要求
第２の動作内容設定用データ
D2
第３の動作内容設定用データ
D3
第４の動作内容設定用データ
D4
要求推定手段
M13
動作内容
機器制御手段
M11
機器
M3

【図２】


入力装置
3
マイクロフォン
5
スピーカ
7
1
ナビゲーション装置
9
I／F
23
音声入力部
25
音声合成部
27
29
機器制御I/F
表示装置
11
エアコン装置
13
オーディオ装置
15
通信装置
17
各種センサ
19
対話データ記憶部（対話データベース）
35
システム制御部
21
CPU
ROM
RAM
インターネットアドレステーブル
31
ユーザプロファイル記憶部
37
検索制御部
33

【図３】


START
S110
ユーザからの識別情報・入力
S120
ユーザプロファイルのチェック
S130
対話データベースの内容設定
S140
現在日時の確認
S150
現在地と目的地の確認
S160
季節行事・イベントの確認
S170
挨拶発話
①
S180
無音検出？
YES
NO
S190
音声入力処理
S200
状況の検出
S210
ユーザの要求，状態の推定
S220
対話データベースのアクセス及び評価値の計算
S230
検出内容不足？
YES
NO
S240
不足内容の問い合せ
S250
絞り込み必要？
YES
NO
S260
絞り込みのための問い合せ
S270
機器の動作内容・設定
S280
機器制御
S290
対話終了？
NO
YES
END
①

【図４】

	分類	季節	時間帯・日時	目的地	現在地	環境	車外状況	車内状況	要求	状態	個人情報
L1	挨拶		04:00～11:00								
L2	挨拶		11:00～18:00								
L3	挨拶		18:00～04:00								
L4	挨拶	夏									
L5	挨拶	冬									
L6	挨拶						晴れ				
L7	労い		深夜								
L8	家族										子供有り

	ユーザ発話（認識語彙）	動作内容：「エージェント発話（標準形）」	推定要求	推定状態	推定関連要求
L1		発話：「おはようございます。」			
L2		発話：「こんにちわ。」			
L3		発話：「こんばんわ。」			
L4		発話：「暑いですね。」			
L5		発話：「寒いですね。」			
L6		発話：「今日は本当に良い天気ですね。」			
L7		発話：「夜遅いのに大変ですね。」			
L8		発話：「お子さんはお元気ですか。」			

【図５】

	分類	季節	時間帯・日時	目的地	現在地	環境	車外状況	車内状況	要求	状態	個人情報
L9	食事					一般道路					
L10	食事					高速道路					
L11	食事		<1998/5/20/11:00>		<刈谷>	一般道路					
L12	駐車場			<岡崎のイ>	<刈谷>	一般道路			駐車場，食事		
L13	経路案内			<岡崎>	<刈谷>	一般道路			経路案内		

	ユーザ発話（認識語彙）	動作内容：「エージェント発話（標準形）」	推定要求	推定状態	推定関連要求
L9	{めし｜ご飯｜腹減った｜お腹すいた｜何か食べたい｜レストラン｜・・・}	検索・発話：「お食事ですね。この近くならば<a>、<b>、<c>など<X1>件のお店があります。どこで食べますか。」	食事	空腹	駐車場，休憩，飲み物
L10	{めし｜ご飯｜腹減った｜お腹すいた｜何か食べたい｜レストラン｜・・・}	検索・発話：「<d>パーキングエリアまであと<X2>分、<e>パーキングエリアならはあと<X3>分です。	食事	空腹	
L11	<<岡崎>>，{めし}，{インド料理}	検索・発話：「<X4>時<X5>分に、<f>が予約できます。」	食事，行楽	空腹の前	駐車場，休憩，飲み物
L12		検索・発話：「駐車場は<g>が空いています。」	経路案内	移動の準備	
L13		検索・発話：「<h>は混雑していますので<i>で行くことをお勧めします。」			

【図６】

	分類	季節	時間帯・日時	目的地	現在地	環境	車外状況	車内状況	要求	状態	個人情報
L14	検索					一般道路		家族連れ	食事	空腹	
L15	買物		09:00～21:00			一般道路		家族連れ			
L16	買物		09:00～21:00			一般道路		家族連れ	買物	移動の準備	[Aデパート]によく行く
L17	趣味	冬									スキーが趣味
L18	趣味										ゴルフが趣味[Dゴルフ場]によく行く

	ユーザ発話（認識語彙）	動作内容：「エージェント発話（標準形）」	推定要求	推定状態	推定関連要求
L14	{どこかいいところ}	検索・発話：「<○○レストラン>でどうですか。」			
L15	{買物|ショッピング|デパート}	検索・発話：「お買物でしたら、<j>と<k>が近くにあります。」	買物	移動の準備	駐車場
L16	{いつものところ|よくいくところ}	検索・発話：「[Aデパート]ですね。今日は○○のバーゲンをやってます。」			
L17	<<C山>>，{スキー}	案内制御・発話：「<C山スキー場>へのルートガイドを開始します。」	スキー	快調	
L18	{ゴルフ}，{いつもの}	発話：「[Dゴルフ場]ですね。予約状況を調べますか。」	ゴルフ場予約	快調	天気予報，食事，ドライブ

【図７】

	分類	季節	時間帯・日時	目的地	現在地	環境	車外状況	車内状況	要求	状態	個人情報
L19	機器操作							有40人以上乗車中			
L20	機器操作							有30人以上乗車中	{エンボス以外}{エアコン操作}		
L21	機器操作							有20人以上乗車中			

	ユーザ発話（認識語彙）	動作内容：「エージェント発話（標準形）」	推定要求	推定状態	推定関連要求
L19		エアコン制御・発話：「車内温度が40℃を超えています。エアコン設定温度を下げます。」	エアコン設定温度下げる	暑くて乾いた	
L20		発話：「暑いですね。エアコン設定温度を下げますか。」	エアコン設定温度下げる	暑くて乾いた	
L21	{あつい|あついなあ}	発話：「暑いですね。エアコン設定温度を下げますか。」	エアコン設定温度下げる	暑くて乾いた	何か飲みたい，休みたい

【図８】

	分類	季節	時間帯・日時	目的地	現在地	環境	車外状況	車内状況	要求	状態	個人情報
L22	機器操作								エアコン設定温度下げ	暑い喉が乾いた	
L23	機器操作								エアコン設定温度下げ	暑い喉が乾いた	

	ユーザ発話（認識語彙）	動作内容：「エージェント発話（標準形）」	推定要求	推定状態	推定関連要求
L22	{はい|うん|下げる|『無応答』}	エアコン制御・発話：「わかりました。エアコン設定温度を下げます。」	エアコン設定温度下げ	暑い喉が乾いた	何か飲みたい，休みたい
L23	{いいえ|いや|下げない|このまま}	エアコン制御・発話：「このままにしておきます。」	エアコン操作不要	平常	

フロントページの続き

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